# DRUG & COSMETIC INDUSTRY

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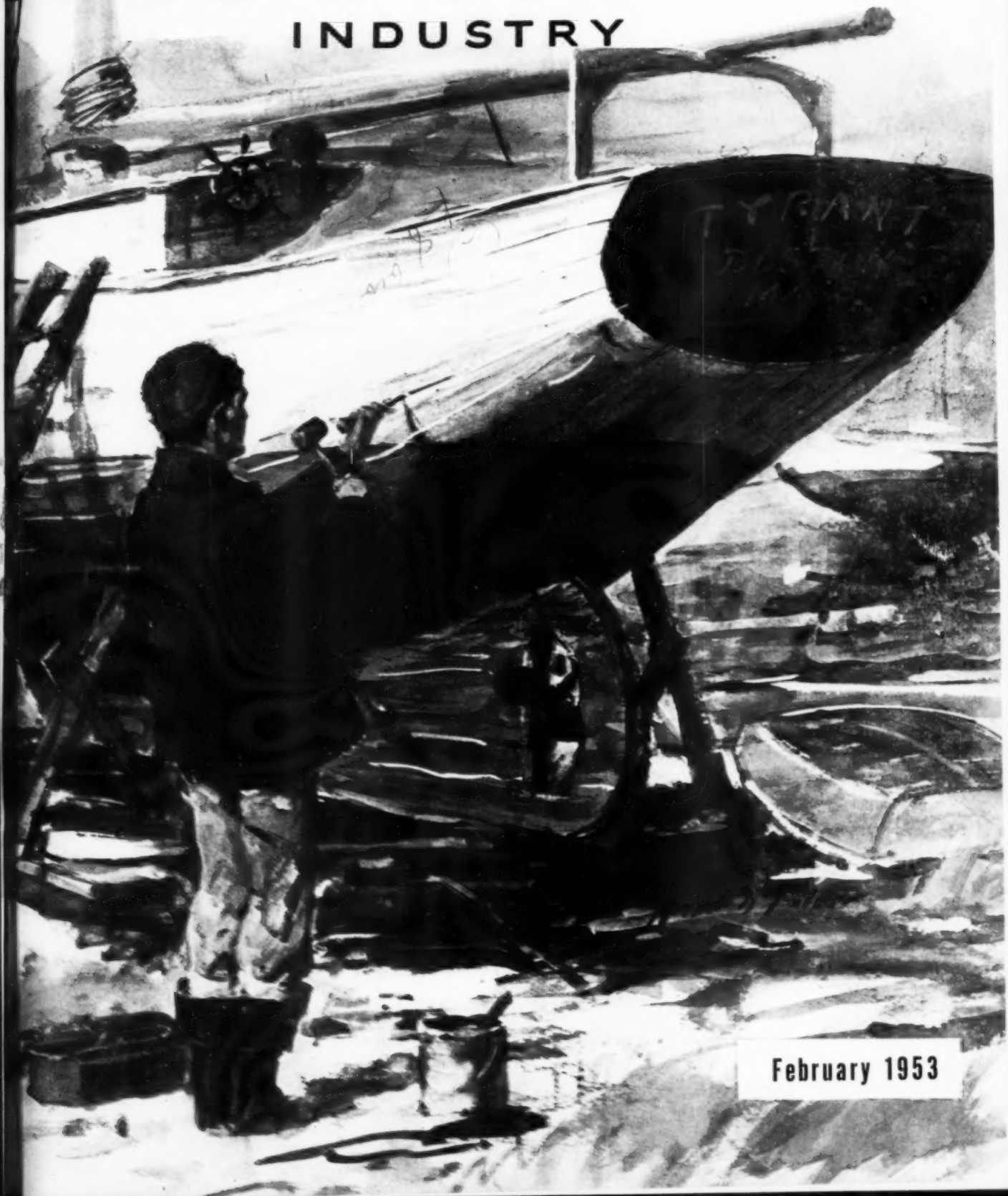
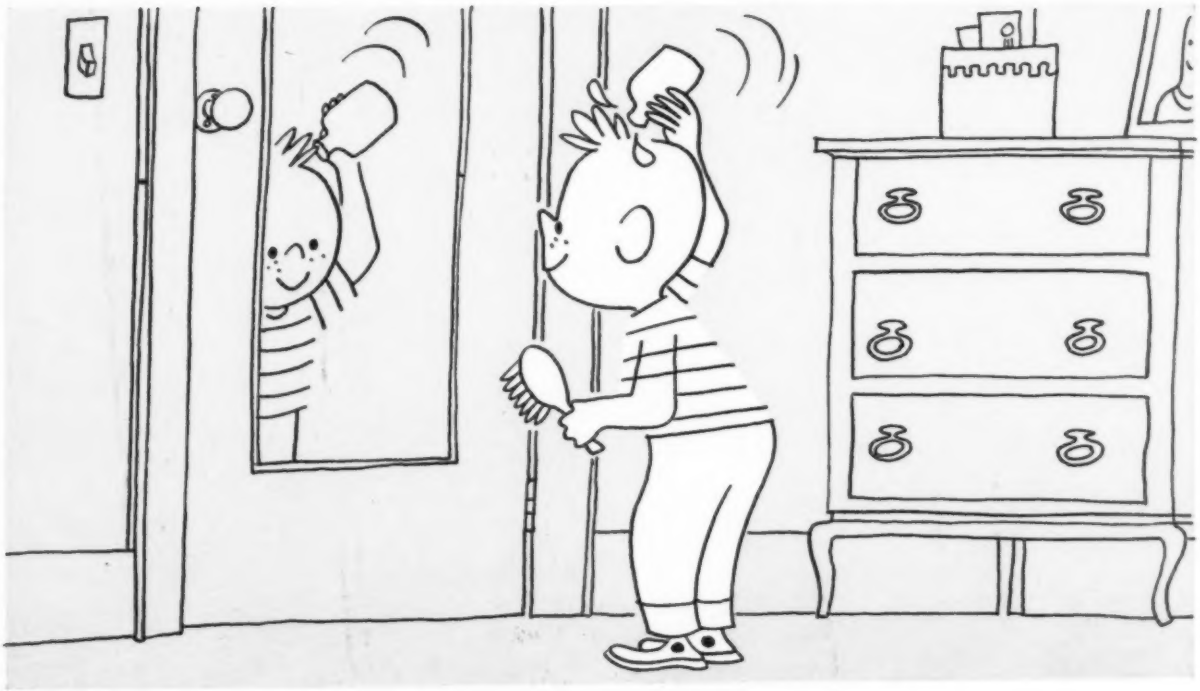


February 1953

# When a man's a lady's man



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# DRUG & COSMETIC INDUSTRY

## FEBRUARY, 1953

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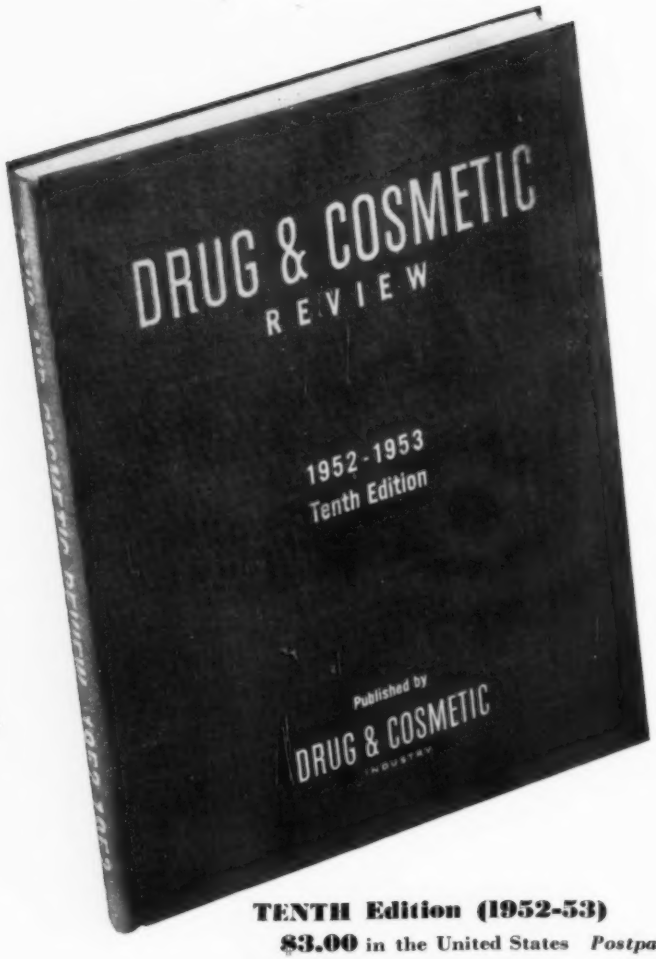


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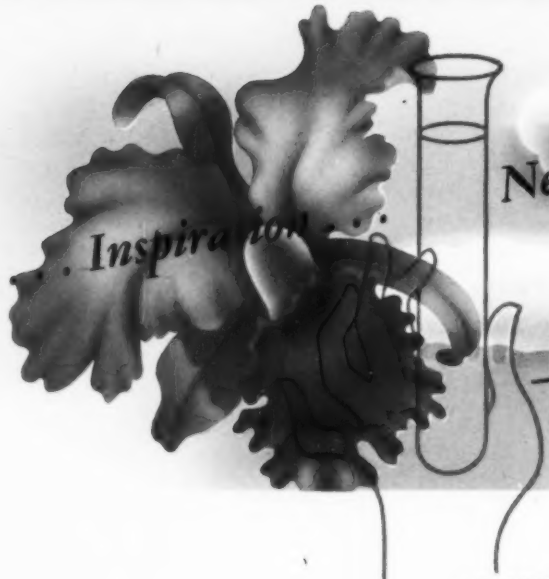

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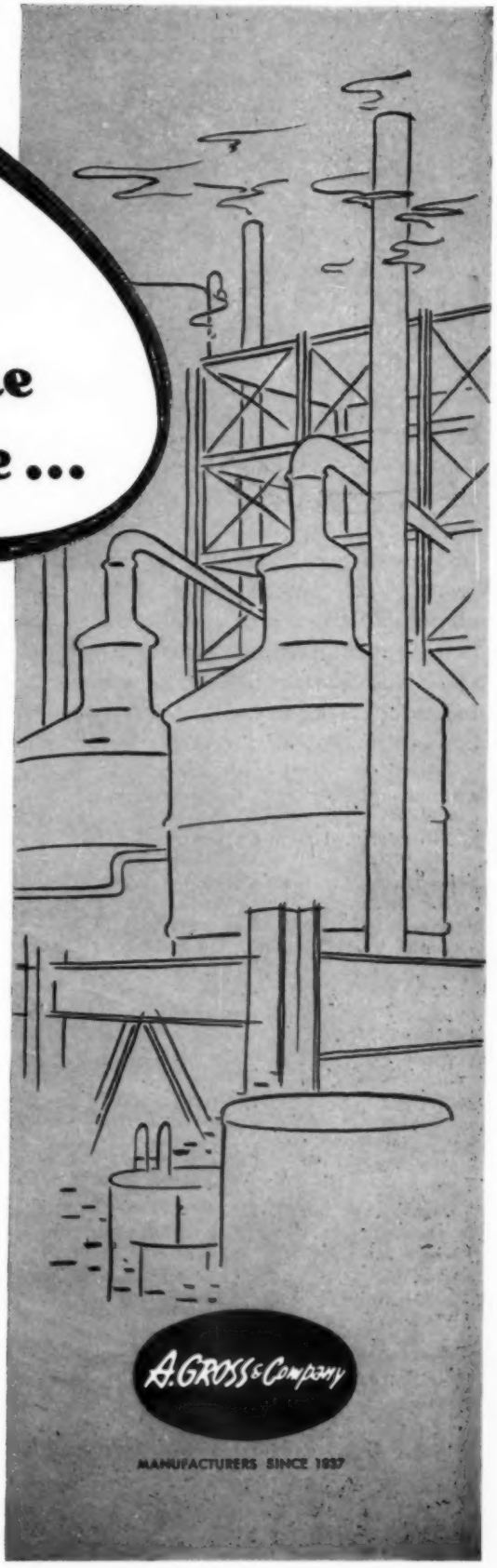


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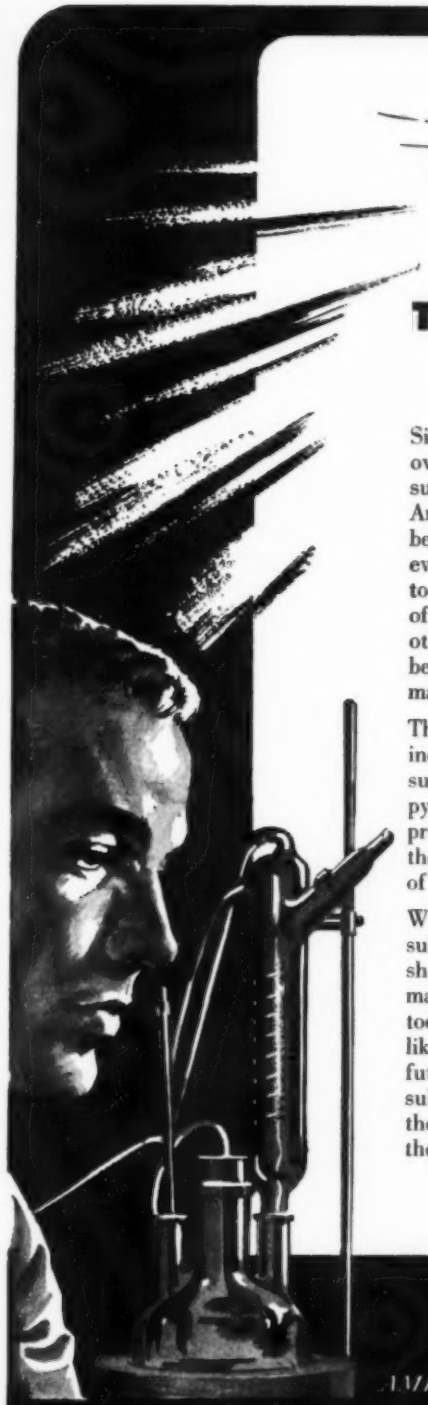

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*HERCULES POWDER COMPANY* Cellulose Products Department, 977 Market Street, Wilmington 99, Delaware

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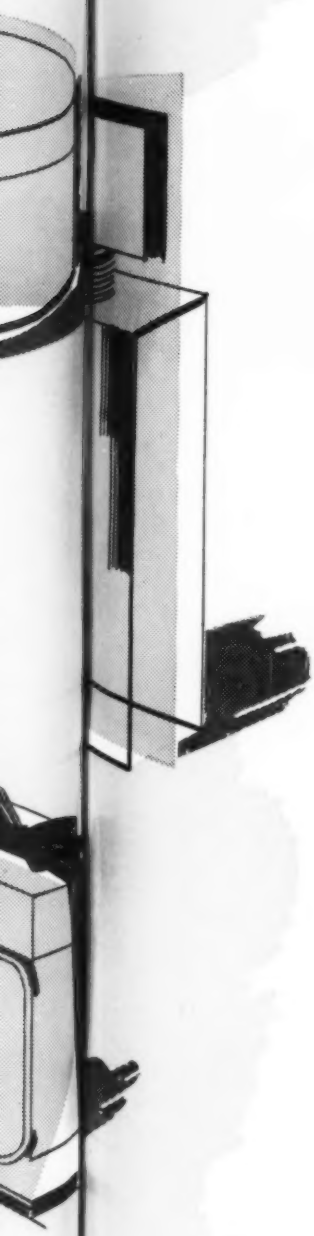

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Giving your colognes special odor distinction is one way of giving them new and potent sales appeal. This is a problem that demands not only a knowledge of consumer preferences, but also a skill in adapting the odors to specific cologne products such as liquids, sticks, creams and body sachets. Givaudan's staff is equipped with the skill and the technical facilities to provide you with perfumes that will help you put your colognes in the forefront in profitable markets.

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*Experienced workers prepare your products.*

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- **VERONOL**.....A single chemical of great power used to achieve the aldehydic top note.
- **CYCLAMAL**.....The accepted raw material for producing that clean, floral fragrance in all types of products, from soaps to the most expensive perfumes.
- **CUMIN KETONE**..To impart the natural floral note to your compositions.
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Sole Representatives in the United States for J. AND E. SOZIO, Grasse, France
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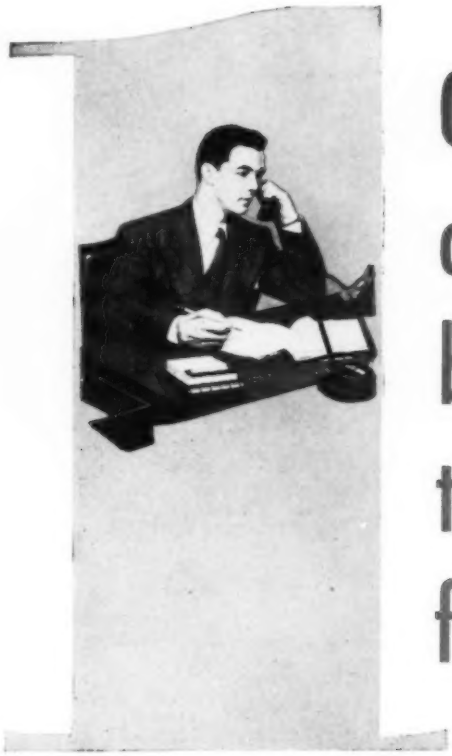

# One call brings them all from Penick

**ESSENTIAL OILS** Offering the full range of standard essential oils as well as a number of rare and unusual oils of finest purity and quality, many distilled in our own plant.

**FLAVORS** Food, Beverage and Pharmaceutical manufacturers recognize Penick's OPTIMO® BRAND IMITATION FLAVORS as vital to their finished products. These flavors combine unexcelled quality, unusual strength and economy.

**VANILLA PRODUCTS** Two types of outstanding all-purpose vanilla products are now available to manufacturers who require true, delicious vanilla flavor and aroma that will remain unaffected by extreme temperatures.

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**PERFUME COMPOUNDS** Triumphs of the art of combining fragrances from the finest natural oils and aromatics, to impart true odor reproduction to your finished compositions.

**OLEORESINS** Large stocks of high-quality botanical raw materials enable us to select choice lots for manufacturing use. Meticulous care is exercised in the milling to preserve the delicate aromatic principle, and our flavor retention process insures that these OLEORESINS will keep the full flavor of the raw material, in concentrated form. Penick OLEORESINS are guaranteed to meet the most exacting requirements.

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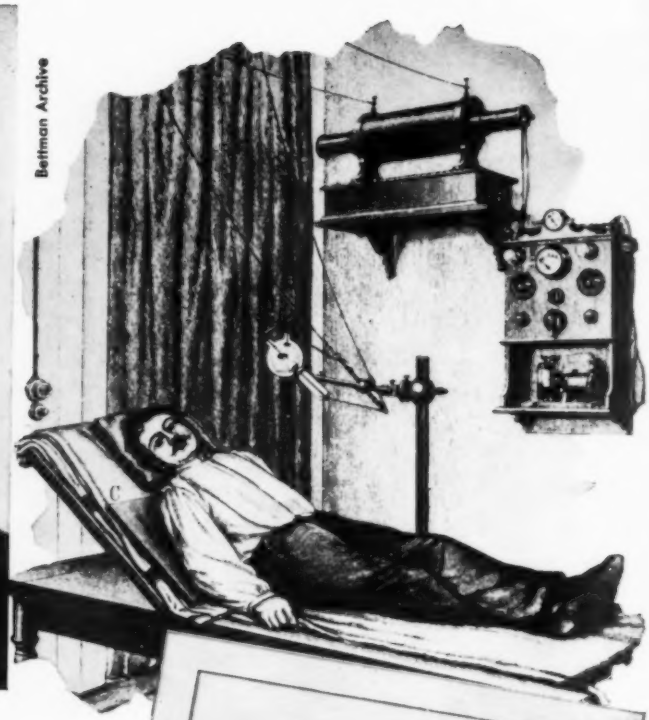

Bettman Archive

Wilhelm Konrad Von Röntgen (1845-1923) noted German physicist discovered X-rays while experimenting with the conduction of electricity through gases. He called the mystery rays "X-rays" because he was uncertain of their nature. Illustration shows a patient about to have his chest X-rayed.

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# U.S.I. CHEMICAL NEWS

February ★ A Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1953

## "Whitewashing" Saves Teeth by Stimulating Re-growth

A new method for repairing and saving dying teeth by "whitewashing" them with calcium hydroxide was described at a recent dental conference. By application of the method, it is said to be possible for dentists to save fractured, broken, or badly decayed teeth which otherwise would have to be extracted or de-nerved.

The method consists of first cutting away diseased portions of the tooth pulp — the innermost portion of the tooth which surrounds the nerve. Exposed pulp is then coated with calcium hydroxide in a methyl cellulose paste. Calcium hydroxide stimulates the growth and replacement of dentine, the semi-hard part of the tooth just under the enamel. Function of the methyl cellulose is to hold the stimulant in place long enough to be effective. Within two weeks, x-ray pictures show that new dentine has been formed, after which the usual cavity filling materials can be used to repair the hard outside covering of the tooth. Without the replacement of dentine prior to filling, the tooth would be subject to further decay and fracture, it is said.

## *Easy Lab Trick Makes Pyrex Glass Invisible*

A novel method was suggested recently for distinguishing between soft and Pyrex glass tubing. Such a check is often necessary in sorting tubing in a stockroom or in making certain that two pieces are the same before they are sealed in a flame. The trick is to mix 59 ml. of carbon tetrachloride with 41 ml. of benzene. The result is a solution with a refractive index approximately that of Pyrex glass. When an assortment of pipettes or other tubing is placed in the solution, the Pyrex pieces will be invisible while the soft glass pieces will be clearly visible. Another mixture which is said to work equally well can be made by mixing five parts of benzene and one part of ethyl alcohol.

## New $B_{12}$ Feed Supplement

A new, improved form of vitamin $B_{12}$ is now available to the feed industry as a result of U.S.I.'s improved processing techniques. The new product is 12 mg. per pound Feed Supplement. U.S.I. is continuing production of its 6 mg. per pound Feed Supplement which has been available for some time.

## *World-Wide X-Ray Studies*

A survey of world-wide work currently going on in exploring the atomic structure of solid matter by the use of x-rays is presented in a recent government report. Included are 16 papers given by authorities from the United States, England, France, and Germany at a conference on the applications of x-ray spectroscopy to solid state problems.

# New Pyrenone Slurry Formulation Saves Stored Seed From Insects, Does Not Affect Food or Feed Use

### U.S.I.'s Well Known Insecticide in Wettable Powder Form Allows Slurry Treating in Present Equipment; Can Be Combined with Accepted Fungicides or Used Alone

For the first time, seed dealers and processors are now able to slurry-treat grain stocks against insect infestation without committing the stock to seed use alone, by using U.S.I.'s latest development in agricultural chemicals — Pyrenone* Seed Protectant (Slurry). Already familiar to grain farmers and dealers, Pyrenone Grain Protectant in dust form was first introduced on a limited scale by U.S.I. in 1950. It was made available nationally a year later and met with immediate and enthusiastic acceptance. With it, farmers can obtain season-long protection against insects with only one simple treatment, even when the grain is stored in open cribs or bins. No masks, gloves, or other special safety measures have to be taken, and the treated grain is entirely safe to use either as feed or food.

The new formulation of Pyrenone Seed Protectant (Slurry) makes this same protection available to seed dealers and processors in an even more convenient form. It can be applied to grain in present slurry treating equipment, and it can be used alone or in combination, with all the well known fungicides. Tests in combination with such ma-

MORE

*Reg. U. S. Pat. Off.

## *Oral Administration of Methionine Found to Improve Dark Adaptation*

Recent research has shown that oral administration of methionine brings about an improvement in dark adaptation — the ability of the eye to become adjusted for night vision. The improvement is apparent within an hour and lasts for a period of 24 to 32 hours, it has been found.

This represents a new and unusual application for methionine. It has been known for some time, however, that methylating agents such as vitamin $B_{12}$ and methionine are involved in the utilization of vitamin A. Further clinical work will be necessary before final conclusions can be drawn.

The use of methionine to improve dark adaptation may prove to be important in high altitude aviation operations as well as in marine operations involving concentrated night watch duties.

**A scene in a modern seed processing plant showing equipment for slurry treating seed stocks against insects and fungus. Seed is metered from hopper at the top, dropped into mixing chamber at left, and slurry is automatically added from the storage tank at the right. Seed is mixed by a series of baffles or brushes and is bagged immediately after treatment.**

February ★ **U.S.I. CHEMICAL NEWS** ★ 1953

CONTINUED

## *Seed Protection*

terials as Spergon, Arasan, Thiram, Phygon and Orthocide 406 have proved that Pyrenone is compatible with these fungicides and that it offers no hazard to germination of the seed. Only one pound of Pyrenone Seed Protectant (Slurry) is needed to protect 100 bushels of seed against elevator and warehouse insect pests for an entire storage season.

**U.S.I.'s New Pyrenone Slurry Formulation is a safe solution to the insect problem in seed warehouses and elevators.**

A further advantage to seed dealers is the fact that seed treated with Pyrenone Seed Protectant (Slurry), but not with fungicide, can be used for feed or milling purposes. Other insecticide treatments leave the grain unfit for any use except seed. This often means a loss to dealers and processors who find at the end of the season that they have overestimated demand for a particular grain or variety. Now with wettable Pyrenone Seed Protectant (Slurry), the dealer can treat all of his seed against insects as he receives it. He can include a fungicide treatment, either at the same time or later, to as much of the seed as he desires. At the end of the season, he can sell any surplus (not treated with fungicide) for human or animal consumption, or he can store it for an indefinite period.

Exhaustive tests in both U.S.I.'s laboratories and in the field have shown Pyrenone to be entirely free of toxic hazards. Employees in seed processing plants, dealers and farmers who handle the seed, and even the seed itself remain safe without special safety precautions.

## Vacuum Metallizing Yields Low Cost Coating Method

Metallizing by vacuum evaporation, a comparatively new method for giving brilliant finishes to plastics and metals, is growing rapidly in popularity, according to a recent report. Principal factor responsible for its increasing use is said to be the triple advantage of providing bright finishes at extremely low processing costs with economical consumption of critical metals. Articles to be coated are placed on suitable jigs and introduced into a chamber which may consist of a bell jar, or in large industrial units, a steel tank. A small amount of the coating metal is placed on filaments arranged in the chamber, and the chamber is then evacuated. Low voltage current fed to the filaments vaporize the coating metal which condenses on the articles to form the coating. When the coating is applied to only one surface, the article may be held stationery. When a number of surfaces must be coated, or where irregularly shaped pieces must be covered completely, rotary jigs are employed.

Thickness of the film is usually four millionths of an inch, and 25,000 square feet of surface can be covered with one pound of aluminum. In the case of plastics or other non-metallic base materials, vacuum evaporation is said to provide an ideal conducting base for subsequent build-ups by conventional electroplating.

## *New Book on Lab Safety*

A new edition of a laboratory safety manual was recently announced for free distribution to all interested persons. The 48-page illustrated book has chapters on accident prevention, first aid, fire prevention, and safety equipment. It also contains a comprehensive list of rapid treatments for laboratory mishaps, both external and internal.

### TECHNICAL DEVELOPMENTS

*Information about manufacturers of these items may be obtained by writing U. S. I.*

**A new, all-purpose metallic repair compound** reportedly requires no heat or mixing, withstands up to 150 lbs. per sq. in. when set, is flame resistant, alcohol and waterproof, sticks to aluminum, and can be used to repair such items as engine blocks, jewelry and tools. **(No. 891)**

**A redesigned model of a flash-point tester** called for in many paint and oil industry test specifications has a built-in gas or electric heater, non-tippable cup, and a special slow speed stirrer. **(No. 892)**

**A new wallpaper paste, for application** to the wall instead of the paper, is claimed to stick to almost any surface without sizing and can be reactivated on the wall simply by applying water. **(No. 893)**

**A pocket hardness tester** is said to give direct readings accurate to 1.5 points for metals and alloys in the range of 25 to 65 Rockwell "C" scale. Unit consists of microball indentor, microscope to measure indentation, and a standard hardness test block. **(No. 894)**

**A new "pocket-size" laboratory pump** weighing 4.5 lbs. produces either air up to 10 lbs. per sq. in. pressure, or a vacuum of 12 in. of mercury. No larger than a liter beaker, unit can be moved easily for filtering, air stirring, aeriation, gas circulation, etc. **(No. 895)**

**Aluminum in the forms of plastic putty and liquid plating compound** is now available. Former can be modeled like clay, air-dries to tough, durable metal which can be machined, drilled, etc., like solid aluminum. Plating compound plates wood, metal, plaster, leather, without chipping or peeling, air-dries quickly, according to the manufacturer. **(No. 896)**

**Resistance to all types of chemicals, solvents, corrosive materials,** reportedly can be had on lab bench tops, valves, other chemical plant hardware, with a black or clear coating which air-dries or bakes under infrared lamps. Finish is also claimed to have long-term weather durability on wood. **(No. 897)**

**A new chemical brushing compound for aluminum** and its alloys is said to change the metal's surface to a non-metallic, tough, paint-receptive layer which anchors paint firmly, protecting the metal from corrosion. **(No. 898)**

**A de-icing fluid in a "squeeze-it-on" bottle,** now available to motorists, can be applied to windows when icing conditions start to eliminate need for stopping to scrape off ice, the manufacturer claims. **(No. 899)**


## PRODUCTS OF U.S.I.

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Amyl Alcohol (Isoamyl Alcohol)
Butanol (Normal-Butyl Alcohol)
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**Ethanol (Ethyl Alcohol)**
Specially Denatured—all regular and anhydrous formulas
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Pure—190 proof U.S.P., Absolute—200 Proof
Solox*—proprietary solvent—regular and anhydrous

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**ACETIC ESTERS**
Amyl Acetate—Commercial and High Test
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Ethyl Acetate—all grades
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**OXALIC ESTERS**
Dibutyl Oxalate
Diethyl Oxalate

**PHTHALIC ESTERS**
Diamyl Phthalate
Dibutyl Phthalate
Diethyl Phthalate

**OTHER ESTERS**
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Diethyl Carbonate
Ethyl Chloroformate

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Arochem*—modified types
Arodure*—urea-formaldehyde resins
Arofene*—pure phenolics
Aroflat*—for special flat finishes
Araflint*—room temperature curing phenolic
Aroplaz*—alkyds and allied materials
Aropol†—copolymer modified alkyds
Ester Gums—all types
Natural Resins—all standard grades

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Rotenone Products: Liquid and Dust

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Indalone*
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**INTERMEDIATES**
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Special Liquid Curbay*
U.S.I. Vitamin $B_{12}$ and Antibiotic Feed Supplements
Vacatone* 40

**OTHER PRODUCTS**
Acetaldehyde
Caustic Soda
Ethylene
IPC (Isopropyl-N-Phenyl Carbamate)
CIPC
Liquid Chlorine
Metallic Sodium
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Propionaldehyde
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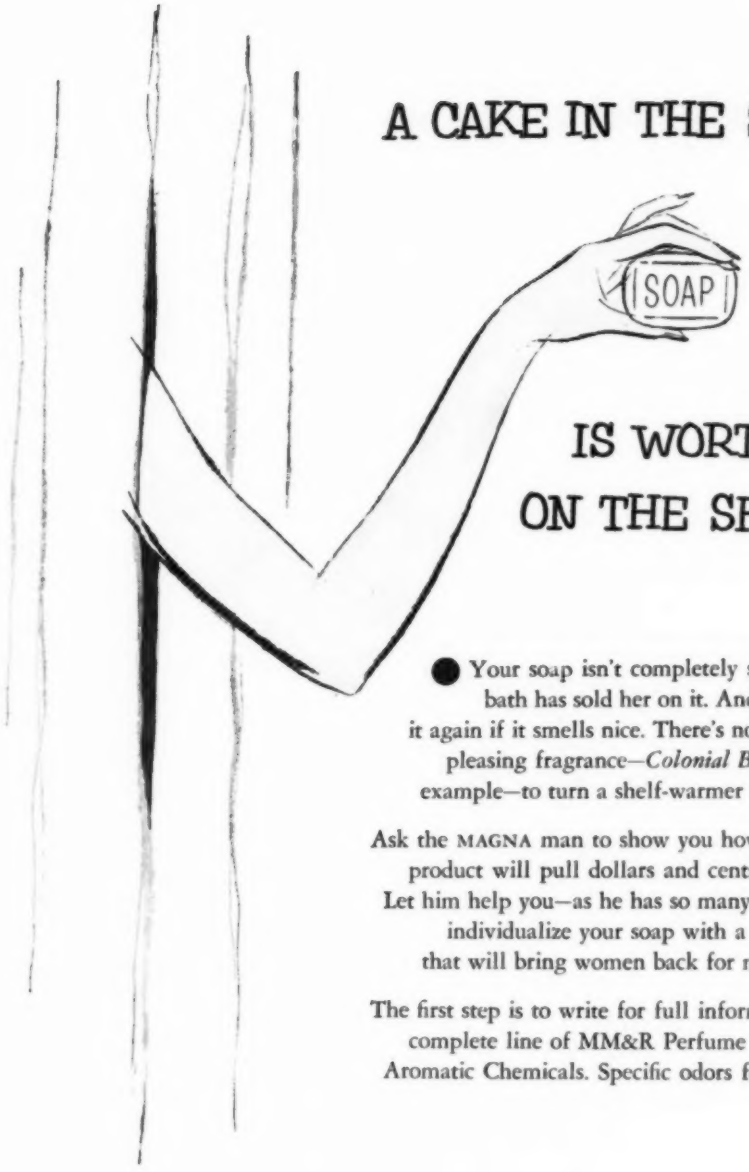


# A CAKE IN THE SHOWER IS WORTH TWO ON THE SHELF

● Your soap isn't completely sold until milady's bath has sold her on it. And, chances are she'll buy it again if it smells nice. There's nothing like a pleasing fragrance—*Colonial Bouquet MM&R*, for example—to turn a shelf-warmer into a red-hot seller.

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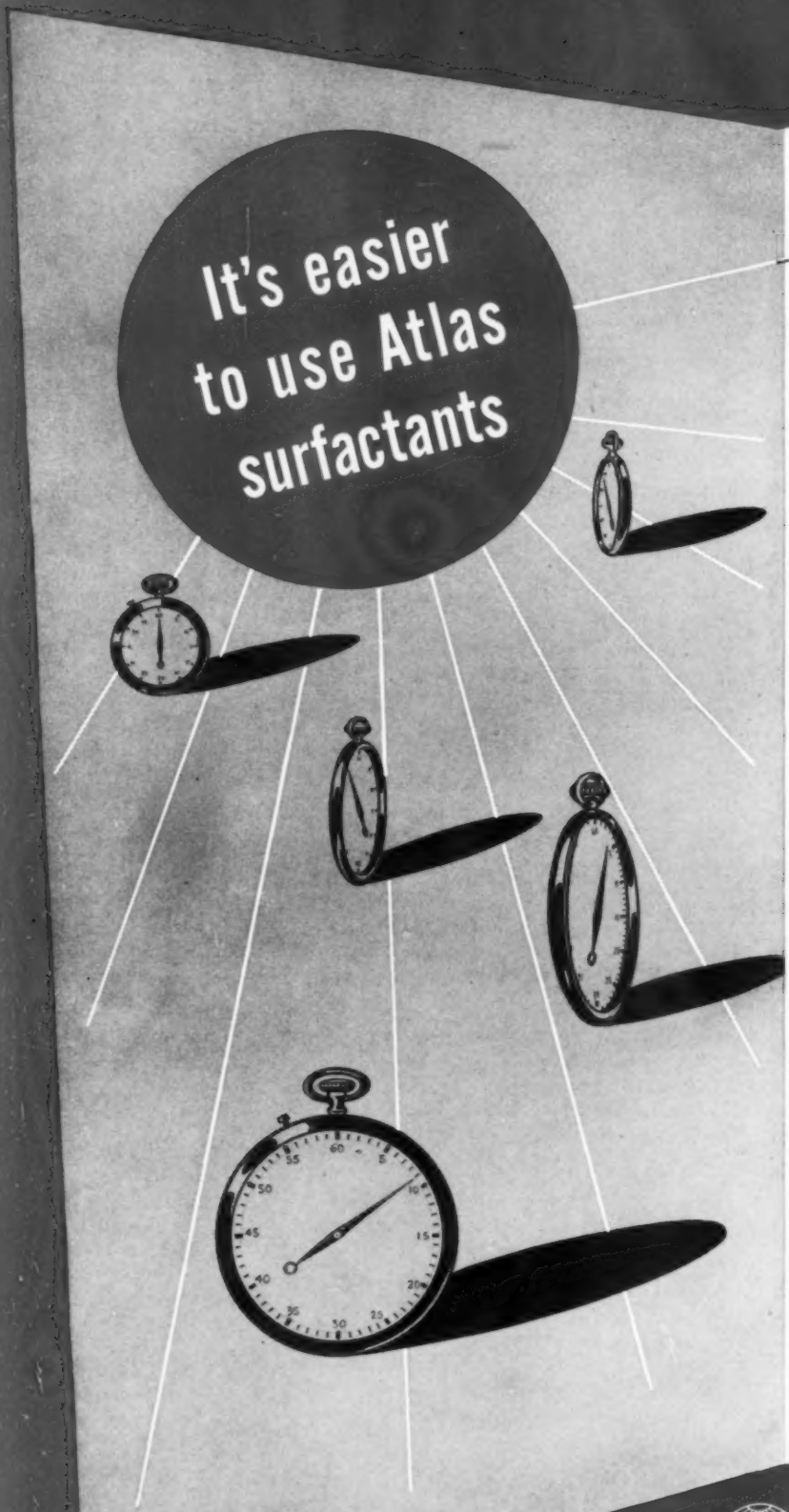


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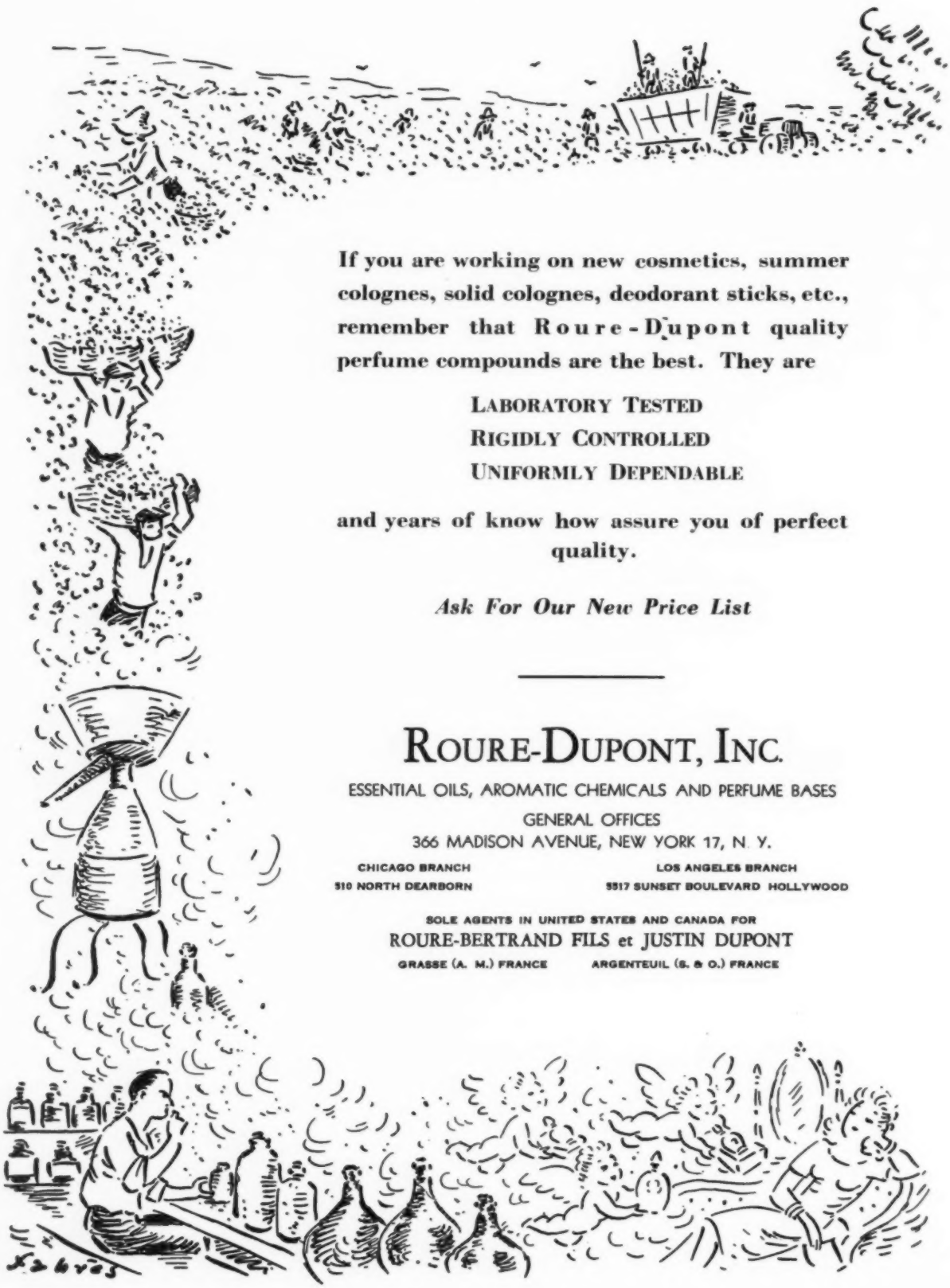

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RIGIDLY CONTROLLED
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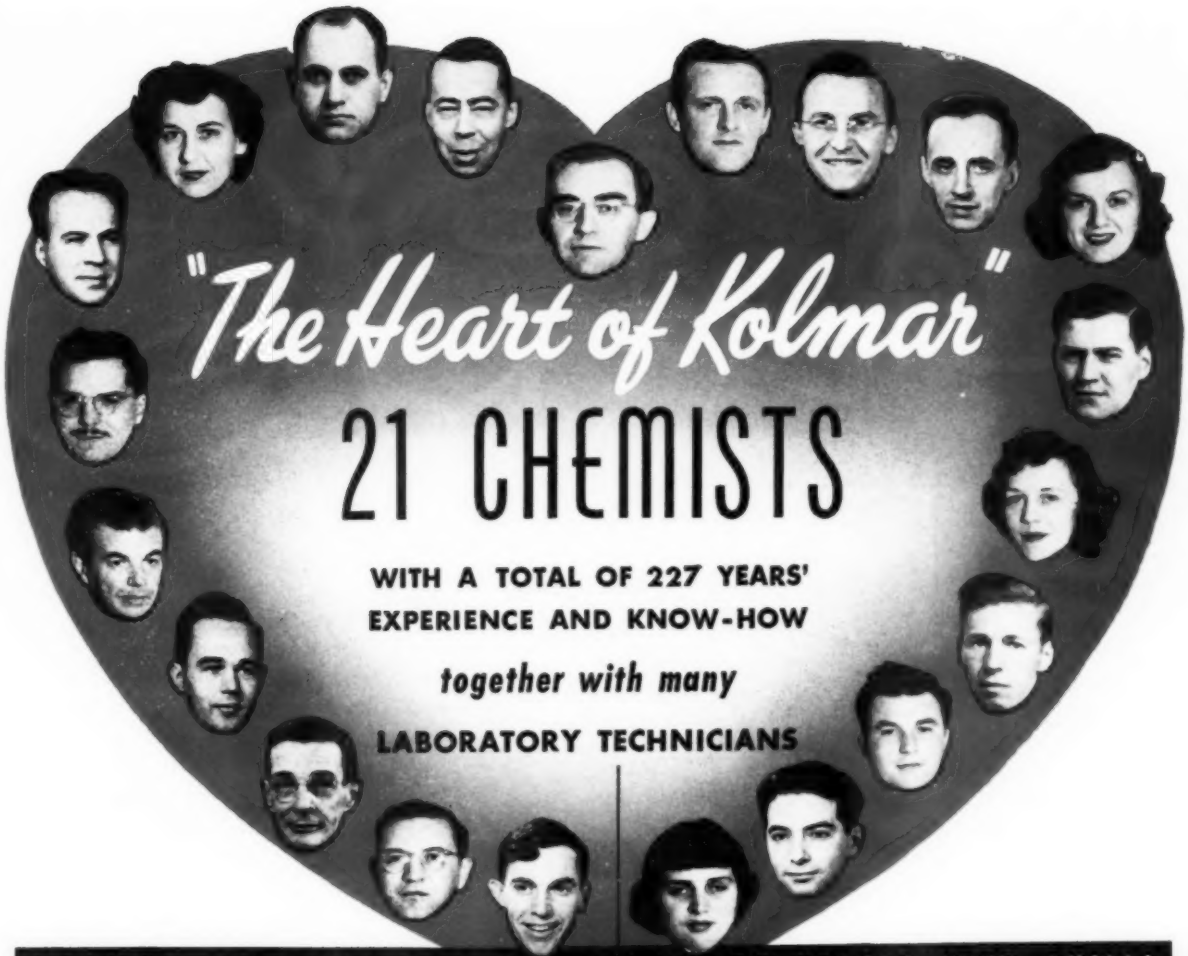
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21 CHEMISTS
WITH A TOTAL OF 227 YEARS' EXPERIENCE AND KNOW-HOW
together with many
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**KOLMAR LEADERSHIP IS THE RESULT OF SPECIALIZED SKILL!**

♥ The "Heart of Kolmar" provides continuous creative research and thorough testing at every step of the manufacturing process...

♥ It provides the control of quality from raw material to finished product...

♥ It has given Kolmar product superiority and uniformity, combined with favorable price...

♥ It has enabled Kolmar to develop many of the best known products in the cosmetic field...

♥ It constantly works for the improvement of existing methods and formulae, and the development of new ones.

♥ It has won Kolmar recognition *as America's Leader in Private Label Cosmetics.*

The customer's rights in the formula under which he operates is always respected by Kolmar. Consultation will not obligate you and there's a Kolmar Laboratory or Representative near to give you prompt service at all times.

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*Kolmar Products include Lipstick, Dry and Cream Rouge, Loose Face Powder, Cake Make-Up, Compact Powder, Foundation Creams, Liquid Make-Up, Eye Shadow, Mascara, Lotions, Colognes, Perfumes and other cosmetics.*

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# ORRIS

*Illustration of actual decorticated Florentine Orris Root*

CHARABOT's Orris Products are obtained through a rational processing of Florentine Orris Roots and we can guarantee an absolutely regular content of the noble constitutent (Natural Irone).

Because Charabot's manufacture of Orris derivatives is not seasonal, but a perennial operation, we are able to offer them in a quality and at prices that are unbeatable.

WE PROUDLY offer Concrete Orris with a 20/21% Absolute content, discovered through a new and exclusive Charabot process, the latest development in the constant search for product improvement.

**The following products derived from Orris, as with all Charabot products, are stocked in this country in original containers which are filled and sealed in Grasse:**

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| **ORRIS CONCRETE** 15/16% Absolute | **ORRIS CONCRETE SELECTA** 20/21% Absolute | **ORRIS ABSOLUTE** |
| **ORRIS INTEGRAL** | **ORRIS RESINOID SOLUBLE EXTRACT** | **ORRIS RESINOID #2** |

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Does not discolor perfumes, creams, soaps, and other cosmetic preparations

*Like a string around a package, it...*

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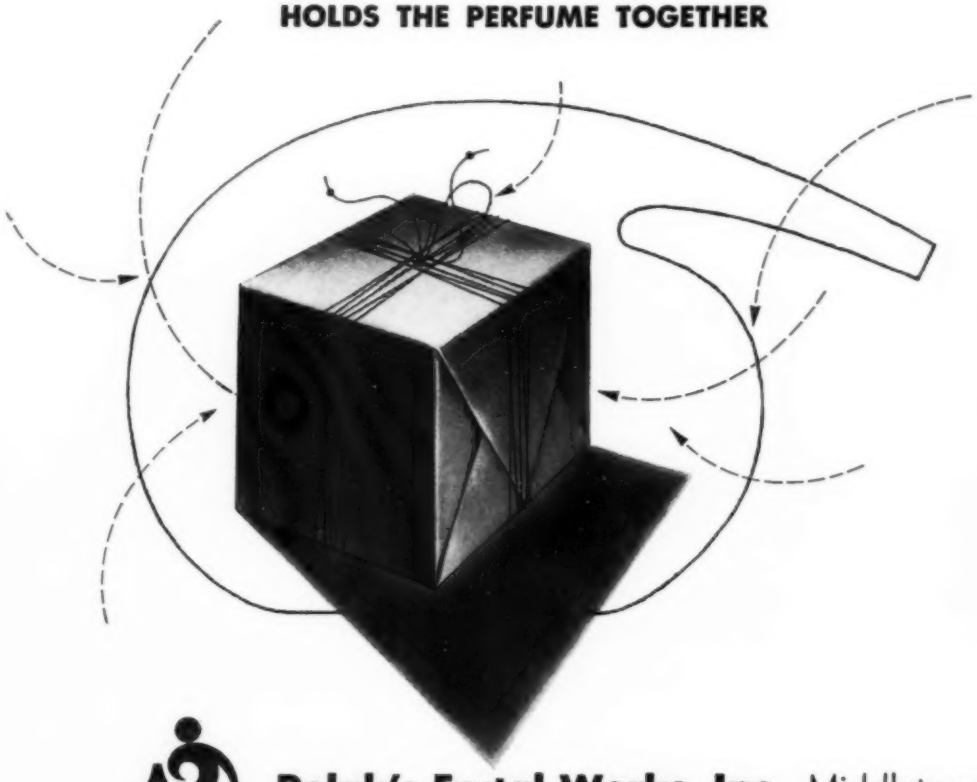

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**Polak's Frutal Works, Inc.,** Middletown, New York

*Domestic and Foreign Patents applied for.

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## TO MAKE THE BEST SUN-TAN PRODUCTS

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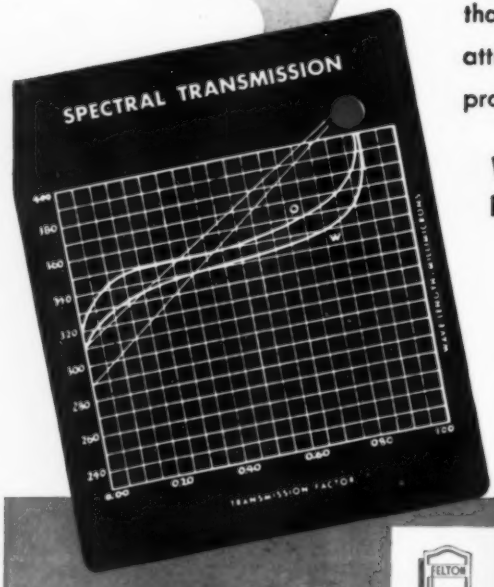
**Sunaromes®**

"O"—OIL SOLUBLE "W"—WATER SOLUBLE

SUNAROMES PROTECT AGAINST THESE SUN-BURNING RAYS!

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Just mix Sunaromes with the base you prefer . . . water-gum, water-alcohol, or even water alone. You can also use a cream base, mineral oil, fatty oil, etc. It's the Sunaromes that make them effective sun screens . . . and scent them so attractively. The protection is positive . . . and there is no problem of skin irritation.

### WRITE TODAY FOR COMPLETE DATA, FORMULAS & SAMPLES WITHOUT OBLIGATION

- **SUNAROMES** completely screen out harmful rays of the sun between 2900-3100 angstrom units.
- **SUNAROMES** permit sufficient of the actinic rays to reach the skin for a beautiful and healthful tan.
- **SUNAROMES** combine a perfect and tested sun-screen and a wide choice of perfumes, soluble in all media, for easy and simple manufacture.
- **SUNAROMES** are economical to use.
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## —Helps Children with Subnormal Growth Rate

A recent study of 300 children* further substantiates the "growth-promoting-effect" of Vitamin $B_{12}$ when it is given as a dietary supplement to children who have failed to maintain a normal growth pattern. In this study Pfizer Vitamin $B_{12}$ Oral Grade Solids and Vitamin $B_{12}$ Crystalline U.S.P. were equally effective.

Check these important characteristics of Pfizer Vitamin $B_{12}$ Oral Grade Solids:

- **A free-flowing powder of uniform bulk.**
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- **Easily incorporated into tablets and capsules by standard methods.**

Pfizer $B_{12}$ Oral Grade Solids is available in containers of 10, 100, 500 mg. and 1 and 5 grams of $B_{12}$ activity. Or if you prefer...

Two Additional Forms of Pfizer Vitamin $B_{12}$ are available: Vitamin $B_{12}$ Crystalline U.S.P. and Vitamin $B_{12}$ Crystalline 0.1% Trituration with Mannitol, Sodium Chloride or Dicalcium Phosphate.

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*Wetzel, N. C. et al.: Further Studies of Vitamin $B_{12}$ Dietary Supplements, J. of Clinical Nutrition 1:17, Sept.-Oct. 1952.

**ORAL GRADE SOLIDS and CRYSTALLINE U.S.P. ARE EQUALLY EFFECTIVE**

*Pioneers and Leading Manufacturers of Vitamins*

Pfizer

# Beauty Fashion

## Provides a straight line to the most profitable points of sale.

**1** *Reaches the retailers who know how to sell perfumes and cosmetics and who do sell well over 80% of these products, except low priced, mass distributed toiletries.*

**2** *These retailers are nearly all (86%) located in the 168 metropolitan markets which do 75.27% of all apparel sales and over 85% of the perfume and cosmetic sales of selected cosmetic distribution.*

**3** *The key to selling in these stores is the girl behind the counter. Beauty Fashion's club subscription, editorial policy, school training program and personal contacts have, over 35 years, made these girls an intimate part of Beauty Fashion's readers.*

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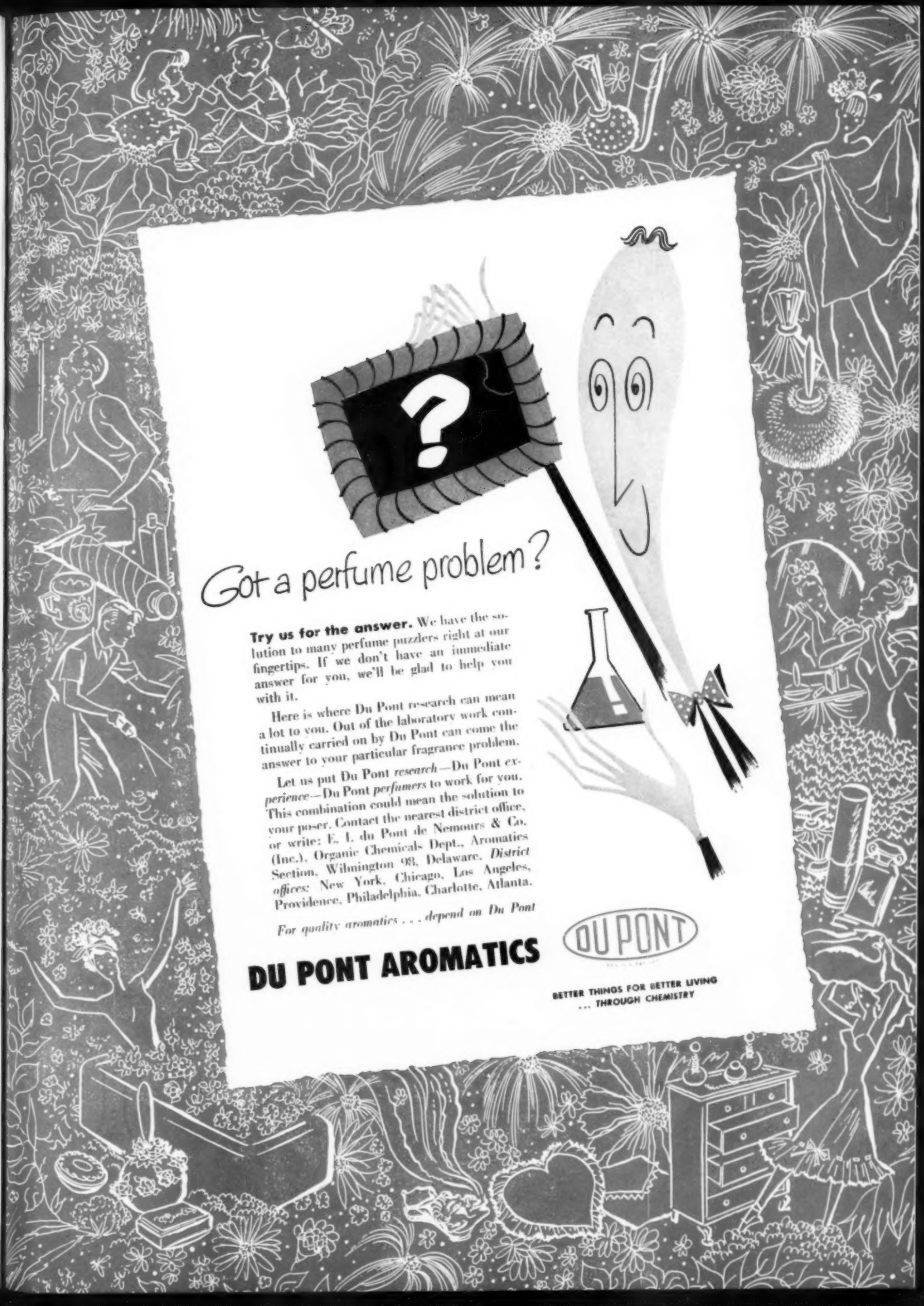


# Got a perfume problem?

**Try us for the answer.** We have the solution to many perfume puzzlers right at our fingertips. If we don't have an immediate answer for you, we'll be glad to help you with it.

Here is where Du Pont research can mean a lot to you. Out of the laboratory work continually carried on by Du Pont can come the answer to your particular fragrance problem.

Let us put Du Pont *research*—Du Pont *experience*—Du Pont *perfumers* to work for you. This combination could mean the solution to your poser. Contact the nearest district office, or write: E. I. du Pont de Nemours & Co. (Inc.), Organic Chemicals Dept., Aromatics Section, Wilmington 98, Delaware. *District offices:* New York, Chicago, Los Angeles, Providence, Philadelphia, Charlotte, Atlanta.

*For quality aromatics . . . depend on Du Pont*

## DU PONT AROMATICS

DU PONT

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

THERE'S *Design* IN FRAGRANCE TOO!

It is by brilliant design as well as imaginative artistry that a perfume meets with success in today's market.

The master perfume chemists of van Ameringen-Haebler, Inc. know markets, know perfumes, and are skilled in the creative arts of perfumery. Their guidance can help you design your next success.

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you may want to know about—

# Phenobarbital

Mallinckrodt began the production of phenobarbital in 1929 and is now one of the foremost producers in the United States.

*advanced methods*

In 1939-40 Mallinckrodt developed improved methods for producing phenobarbital (U. S. Patents 2,346,059; 2,351,085; 2,358,768; 2,367,632; 2,454,360; 2,478,853). Extension of this research led to new and useful methods for metallation, carbolkoxylation, and alkylation of organic compounds. (J. Am. Chem. Soc. *63*, 2056, 2252 (1941); *64*, 576, 578, 580 (1942).

*prompt delivery*

Modern plant facilities for large-scale production, and warehouse stocks at New York, St. Louis and Los Angeles, enable Mallinckrodt to supply promptly the needs of manufacturers in every area.

Mallinckrodt phenobarbital is supplied in 100 lb. leverpak drums, 25 lb. fiber drums and in subdivision packages.

*grades available*

Mallinckrodt phenobarbital is available in the following forms:

Phenobarbital USP XIV Fine Crystals
Phenobarbital USP XIV Powder
Phenobarbital USP XIV Powder Minus 100 Mesh
Phenobarbital Sodium USP XIV Granular (Soluble)
Phenobarbital Sodium USP XIV Powder (Soluble)

Special forms to meet pharmaceutical manufacturers' specifications can be developed for quantity buyers.

MALLINCKRODT CHEMICAL WORKS • St. Louis • New York • Montreal

BISMUTH SALTS • IODIDES •
MAGNESIUM TRISILICATE U.S.P. •
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MANUFACTURERS OF FINE CHEMICALS
FOR THE PHARMACEUTICAL INDUSTRY •
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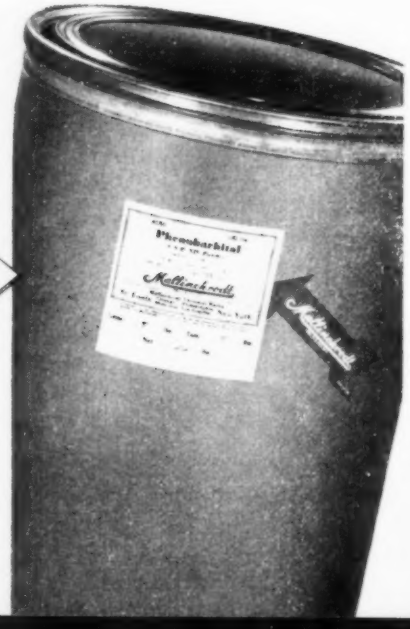


*"If you slip this in your wife's coffee, she'll fight to do the dishes."*

## Keeping Posted

### Fluoridation in Marshall

A six-year experiment in Marshall, Texas, is cited as proof that fluoride in drinking water will drastically reduce dental cavities. Claimed to be one of the most carefully controlled experiments in modern dental research, and conducted with the cooperation of the American Medical Association and the American Dental Association, this experiment, by X-rays of continuous-resident 6-year-olds, compared with those in another community without fluoride, showed:

The Marshall children have 57 per cent fewer cavities than those of the same age group in Jacksonville, Texas, seventy miles away. More than 35 per cent of the Marshall 6-year-olds have no cavities whatever, while only 13 per cent of Jacksonville's 6-year-olds are cavity-free. The cavity rate among Marshall children is declining steadily. Cavities among Jacksonville children, in most years during the period, showed an increase. In 1946, Marshall agreed to become the first city in the South to serve as a guinea pig in the mass experiment. A carefully measured amount of powdered fluoride has been put in the drinking water since then. The experiment continued despite intermittent "statements" over the country—warnings that fluoride was crippling, that there might be a relationship between fluoride consumption and cancer, that "rat poison" was being used, and that teeth would be discolored. From 1946 until the last test in 1952, the youngsters were examined for dental and physical reactions. The results, kept secret, were double-checked and tabulated.

There are 460 cities in the United States which now put fluoride in their water, and the American Dental Association says that many more are preparing to do likewise. In Chicago last month the National Congress of Parents and Teachers asked its local groups across the nation to promote fluoridation of community water supplies.

Lest one be carried away by the results of the Marshall experiment, we call attention to the article "Go Slow on Fluoridation!", by James Rorty, appearing in the February 1953 issue of Harper's Magazine. This article contains much to give pause to many enthusiasts of fluoridation of water supplies.

### Drugs High in Air Freight

Drugs and biologicals were among the 10 chief types of air freight shipments in total weights flown by the United Air Lines last year, reports E. L. Dare, the company's manager of cargo sales, who added:

"This is the first time that drugs and biologicals have been in the upper tonnage bracket. Such items are particularly suited for air freight because they require careful handling and fast transit."

The ten leading air freight items, in the order given, were machines and machine parts, cut flowers, electrical equipment, aircraft parts and accessories, wearing apparel, printed matter, automobile parts and accessories, radio and radio parts, drugs and biologicals, and dry goods.

### Syntex Forms Distributing Firm

Syntex, S. A., the Mexican manufacturer of hormones, which has been distributing its product in bulk in this country through Chemical Specialties Co., has now formed a new corporation, Foundation Laboratories, for distribution in this country of finished products for use by the medical and other professions. Ronald Helps, who went to Chemical Specialties from Schieffelin some time ago, is president of Foundation Laboratories, and Dr. John R. Mote, who headed the development work on ACTH as medical director of Armour Laboratories, is medical director of the new firm. Dr. Jack Reed will head the division of veterinary research and animal husbandry.

The announcement of the new firm was made simultaneously with a clinical report in New Orleans by a group of scientists from Memorial Cancer Center of New York on the completion of clinical tests on a new hormone product used in treatment of breast cancer. Mr. Helps said that this new product, Neodrol, developed and produced by Syntex, was already available for distribution to institutions, hospitals, and medical groups who are now specializing in the treatment of cancer. Mr. Helps said:

"A primary aim of the new company is to offer the

increasing supply of steroid hormones, made possible by revolutionary chemical synthesis methods pioneered by Syntex, to as broad a group of doctors, hospitals, and medical groups as possible, thus assuring both the continuing progress resulting from expanded clinical usage of steroids and easier availability of the drugs to millions who are not now receiving the benefits of steroids."

### *Dr. Kogel on Isoniazid*

It is interesting to read the opinion of Dr. Marcus D. Kogel, New York City Commissioner of Hospitals, regarding the place of isoniazid in tuberculosis. It will be recalled that it was Dr. Kogel who was interviewed by the newspapers for information regarding this drug when the news of its use first broke in the press.

In the report of the Department of Hospitals for 1952, Dr. Kogel said that the most dramatic news of the year was the announcement of the first clinical trials of the hydrazides of nicotinic acid in treating tuberculosis at the department's Sea View Hospital on Staten Island. It will take two or three years, he predicted, for clinicians all over the world to establish the full importance of these drugs. The department, however, already has concluded that their use in combination with streptomycin and para-aminosalicylic acid "will radically change existing concepts of tuberculosis medical practice."

"Given a genuinely effective case-finding program," he said, "ambulatory treatment on a wide scale becomes a distinct possibility. Even in hospitals, modified measures may permit early discharge and home care."

Recalling the "nonscientific, highly emotional reaction from certain quarters of the tuberculosis world" to the first news of the successful use of the new drugs at Sea View Hospital in February of 1952, when some said they were of no value, Dr. Kogel said:

"Sanity, thank goodness, has since returned to the tuberculosis scene and what Sea View investigators had originally stated, i.e., that the drugs appear to constitute an important addition to the tuberculosis armamentarium, is now generally accepted."

### *Aerosol Products in Drug Stores*

Aerosol products accounted for a tenth to a half of druggists' 1952 sales of items offered in both push-button and non-pressure packed containers, according to Du Pont's Kinetic Chemical Division as the result of their sixth annual survey. The study was based on personal interviews last summer with more than 2200 retail outlets, including 374 drug stores. Insecticides proved to be the most widely stocked aerosol product with 98 per cent of the drug stores offering preparations for flying insects, and 93 per cent stocking products for crawling insects. Aerosol shaving creams were stocked by 88 per cent of the drug stores, but conventionally packed products of that type outsold the aerosols ten to one. Since that time, most major shave cream marketers have entered the aerosol field and the aerosol preparations have gained a larger share of the market. Room deodorants, offered in cans by 82 per cent of the outlets, made a better showing than shaving creams. About 34 per cent of the deodorants were sold in pressure-packed form.

Results of the drug store survey on other products were as follows: (the first figure represents the percentage of stores stocking in aerosol form, and the second figure represents the percentage of sales going to aerosols), Hair Lacquers, 72 and 32; moth proofers, 59 and 27; personal deodorants, 47 and 26; suntan sprays, 46 and 19; hair shampoos, 31 and 9; sunburn and other burn preparations, 26 and 12; colognes and perfumes, 22 and 13; plastic sprays, 21 and 42.

### *Delaney Food and Cosmetic Bills*

Two bills were introduced in the House of Representatives by Congressman John J. Delaney of New York, as the result of the two-year investigation of the Delaney Committee. While the bills were not available last month, Mr. Delaney gave the following outline of the purposes of these bills:

"The bill on chemical additives to foods corrects certain weaknesses found in existing law. The number of chemicals entering the food supply of the nation has increased tremendously in the last decade. Many scientists expressed the fear to the committee that many of these chemicals have not been tested sufficiently to establish their harmlessness when consumed over long periods of time.

"The Food and Drug Administration and the Public Health Service reported that of 704 chemicals employed in food today only 428 are definitely known to be safe. Under existing law, however, the government has the burden of proving in a court of law that a chemical employed in a food may be harmful. The Delaney bill requires that proof of safety of a chemical proposed for use in food be obtained before rather than after it is marketed.

"The cosmetic bill is also designed to correct certain weaknesses in the present law. As in the case of foods, a cosmetic can be removed from the market only after the government has assembled data which will establish that the cosmetic may cause injury to users. While such evidence is being obtained, injuries may occur. The committee's report found that there has been a considerable number of injuries from many types of cosmetics. During 1951, for example, hair shampoos were marketed which, when inadvertently introduced into the eye, caused serious eye injury.

"The Delaney bill requires a cosmetic manufacturer to submit to the Food and Drug Administration evidence of the proof of the safety of his products before they are permitted distribution. The bill will require cosmetic ingredients to be specified on cosmetic labels, as recommended by many dermatologists and allergists, and will afford greater protection where dangerous coal tar dyes are employed in cosmetics."

In addition to the Delaney bills, substitute measures are to be introduced by Representative A. L. Miller, Republican of Nebraska. Dr. Miller, a physician, and who was also a member of the Delaney Committee, is expected to get further with his bills than will Mr. Delaney for the simple reason that Dr. Miller is a Republican in a Republican administration. Dr. Miller held a conference with industry and government officials for an

airing of views. Invited to the conference were representatives of the American Bakers Association, the Millers National Federation, General Foods Corporation, the Institute of Shortening and Edible Oils, the International Association of Ice Cream Manufacturers, the Manufacturing Chemists Association, and Food and Drug Commissioner Charles W. Crawford.

Dr. Miller also favors pre-testing and government approval of food and cosmetic chemicals before they are marketed. His bills will contain provisions to limit the length of time the administrator may consider a case—probably 60 or ninety days—and undoubtedly will include establishment of appeals procedure. He suggests an impartial board of experts to act as the appeals body. No appeals mechanism is contained in the Delaney bills.

Dr. Miller's legislation will also differ from that of Mr. Delaney in its pesticide provisions. Dr. Miller intends to write a separate bill for pesticides instead of including it in the foods additive provisions. In all, Dr. Miller intends to introduce three bills, one covering chemical additives in foods, a second on chemicals in cosmetics, and a third on pesticides. Dr. Miller maintains that the burden of proof of the safety of a new additive must be placed on industry, stressing that any law should first consider public health, and only second take up the economic issues—insect control, greater output from fertilizers, etc.

### *Lilly Stops Imitator*

Eli Lilly and Company obtained a consent decree last month which prevents Barry-Martin & Company, Chicago, from imitating four Lilly trade-marked products. The decree, filed January 9, permanently enjoins Barry-Martin & Company from distributing products of the same size, form, and color as Lilly's Becotin (vitamin B complex), Becotin with Vitamin C, Seconal, and Seconal Sodium. It also prohibits the use of the product names Barotin and Barotin with Vitamin C. Walton M. Wheeler Jr., secretary and general counsel of Lilly, said: "Indications were that Barry-Martin products were being substituted for Lilly's in various parts of the country. This is another step to assure the use of our products whenever they are specified."

### *Inaccuracy in The Lipotropic Agents*

Dr. H. J. Prebluda and William McInnis, of the Special Products Division, U. S. Industrial Chemicals Co. call to our attention what they term an inaccuracy in the article on Lipotropic Agents, by Dr. J. L. Boyle, which appeared in our December 1952 issue. A communication on the subject reads:

"The error occurs in the parenthetical remark contained in the first sentence of the third paragraph on page 843. It reads as follows: . . . '(the synthetic racemic form of amino acid is used instead of the biologically active, laevo form, because it is much cheaper and by giving a larger quantity the same effect can be produced as with the laevo form)' . . .

"We find this statement to be inaccurate for the following reason. The author states that only the L-form is biologically active. We feel that this is in error. It has been found by various researchers that the D-form (or Dextro) is as active in biological systems as the L-form. Therefore, the racemic D-L mixture is completely biologically active."

As a reference, the Textbook of Biochemistry, by Benjamin Harrow, Ph.D., Third Edition, Revised, published by W. B. Saunders Co., 1944, page 356, is cited.

### *ADA and Tooth Pastes*

The prevalence of "distorted claims" in tooth paste advertising is severely criticized in the current issue of the Journal of the American Dental Association. In a report issued by the Council on Dental Therapeutics, a "skeptical attitude" is urged toward all dentifrice advertising which makes claims beyond that of conventional cleansing properties. The council has not to date recognized the claims of special protective or curative qualities made for any dentifrice now on the market on the grounds that no adequate evidence exists to substantiate such claims.

The report points out that proper use of the tooth brush is more important in oral hygiene than any particular kind of dentifrice and added that advertising claims for many tooth pastes and powders are "exaggerated and misleading."

"The firms marketing some dentifrices apparently resort to these forms of 'puffery' in their efforts to compete successfully in a field crowded with articles whose questionable values are misrepresented daily in advertising," the council said.

### *Dental Care Survey*

Half again as many males are in need of complete artificial dentures as are women, says the Bureau of Economic Research and Statistics of the American Dental Association. In a nation-wide survey of dental patients it was also determined that one out of each ten adult males had lost all his teeth, while for women the figure was one in fifteen. In the survey, more than 4,000 family dentists submitted reports on 39,679 patients.

Bureau Director B. Duane Moon said the study indicated that women are more conscientious about dental treatment than men. His figures show that women are more apt to have missing teeth replaced by bridges and partial dentures than are men. Tooth decay was found to be the principal reason for the loss of teeth up to the age of 39 for women and 34 for men. After these ages, periodental diseases (ailments of the gums and other tooth-supporting tissues) were primarily responsible for loss of teeth. Almost 50 per cent more men than women were found to be in need of extractions because of diseased gums, further indicating more dental neglect by males.

Other facts revealed by the survey are:

Teen-agers between the ages of 15 and 19 were most in need of dental fillings. Dental patients in this age group were found to have an average of five decayed teeth each. About one-fourth of all boys and girls

between the ages of 10 and 14 were in need of orthodontic (realignment of teeth) treatment. One out of each ten adult dental patients needed immediate treatment for diseases of gums. Only about one dental patient out of twelve examined had almost perfect teeth, requiring no dental treatment other than cleaning and scaling of teeth.

### *Infectious Disease Lab.*

Parke, Davis & Company have opened a new virus research laboratory which enables highly hazardous and infectious diseases to be studied at close range. "The specially designed building—one of the few of its kind in the world—allows more critical studies of every type of virus investigation," said Dr. Leon A. Sweet, vice-president and director of research for the company. Under supervision of Dr. F. D. Stimpert, director of microbiological research, Parke-Davis scientists are conducting important experiments involving polio Q fever, the common cold, mumps, measles, and other highly infectious diseases which are difficult in ordinary laboratories.

The scientists, headed by Dr. I. W. McLean and Dr. A. R. Taylor, who direct virus research, will be equipped to seek new data about even such unusual and hazardous diseases as Japanese "B" encephalitis (inflammation of the brain), equine encephalomyelitis (combined inflammation of the brain and spinal cord) and Russian Spring and Summer Disease (a tick-borne brain fever).

### *Plant Inspection Thoughts*

The subject of plant Inspection under the Federal Food, Drug, and Cosmetic Act is being discussed in some parts of this industry to make the point that the simple change requested by the Food and Drug Administration to validate the plant inspection of the Act, is not so simple after all.

It will be recalled that when the U. S. Supreme Court invalidated this section of the law by holding that permission of the owner of a plant was necessary before a plant could be inspected, many in the industry believed that in seeking an amendment to overcome this decision, the FDA would attempt to include in such an amendment the right to include in inspection many things, such as formulae files, and complaint files, which they claim are part of inspection, but which the great majority of manufacturers refuse to show them. Drug manufacturing associations generally, were determined to fight any such extension of inspection power in an amendment to the Act and so informed the FDA.

However, the FDA proposed an amendment which merely removed the requirement for seeking permission of the owner of the plant, and thus made the inspection provision mandatory. This was immediately thought to be entirely satisfactory and was supported by several associations, with only one withholding support. Now the reason for this lack of support becomes apparent. In its petition in the Cardiff case (the case in which inspection was invalidated by the U. S. Supreme Court), the FDA stated that it believed it had the following power or authority:

"Factory inspection of a drug plant may include observation, photographing, and appraisal of the following factors on the premises: (1) conditions of sanitation, (2) raw materials, (3) formula cards, (4) actual manufacturing work sheets, (5) batch records, (6) weight and measuring controls, (7) packing techniques, (8) sterility and pyrogen controls, (9) potency controls, (10) coding system, (11) facilities for maintaining separate identity of each drug, (12) cleaning of equipment between batches, (13) quarantining of drugs until after clearance with control laboratory, (14) qualification of technical personnel, and (15) the 'complaint file' of the firm." From this it can be seen that the FDA contends that it can see, and copy, a manufacturer's formula cards, his actual working sheets, which means that it will have the complete method of manufacture of every manufacturer's products. It is contended in the industry that these things are the private property of the manufacturers in that they represent the manufacturing "know-how" for the preparation of their products.

### *Viderm Claims to Stop*

Advertising that Viderm is a remedy for blotchy skin, skin eruptions, pimples, blackheads, and promotes a faster healing action than any other medication, is to be discontinued under a stipulation between Sol Silfan, trading as the New York Skin Laboratory, Brooklyn, N. Y., and the Federal Trade Commission. Use of the word "laboratory" in the firm name is also to be stopped, and also the statement that a patent was granted because of value of the discovery of the product's formulation.

### *FTC Drops Demonstrator Cases*

The six complaints issued by the Federal Trade Commission about sixteen years ago, were dismissed by the Commission last month. These were complaints brought against cosmetic manufacturers shortly after enactment of the Robinson-Patman Act, concerning the use of demonstrators in department stores. The companies against which they were brought are Elmo, Hudnut, Charles of the Ritz, Primrose House, Coty, and Bourjois. Another case brought against Elizabeth Arden at that time was adjudicated.

The Commission explains the dismissal of these cases as follows:

"Subsequent to the issuance of the complaints and the conclusion of the reception of evidence, the Commission promulgated 'Trade Practice Rules' for the Cosmetic and Toilet Goods Industry. The rules give an interpretation by the Commission of section 2 (e) of the Clayton Act which section was cited as being violated in the various complaints in the supplying of demonstrators.

"Under this interpretation, the law will be violated only 'if demonstrator service' is *not* accorded to all 'competing' customers on proportionately equal terms. The rules also specifically provide that one type of service may be offered to some customers and an alternate type to others, and also set out some of the methods by which it may be determined whether various types of service result in 'proportionately equal terms' to all customers. None of these provisions were in existence

in any form at the time the cases were tried, and it is pointed out that the Commission would, out of necessity, have to take into consideration the Trade Practice Rules in making its final decisions. The Commission is therefore of the opinion that proceedings initiated in the light of the present rules would be so different in pleadings and evidence from those in the present cases, that it cannot in good conscience do other than enter an order of dismissal."

### *Damages Denied*

A Texas woman who had been under the care of a physician for three years for general debility, as a means of saving expense, purchased and self-administered a vial of a hormone preparation with consequent infection and swelling of her arms. She took the residue to the FDA for analysis but received no report. In the suit against the manufacturer for damages, the appellate court of Texas denied $2,950 damages since the jury found no evidence on the part of the plaintiff or the manufacturer. The court said:

"There is no evidence or finding that the defendant company did, or failed to do, anything that might have remotely caused the injuries sustained by Mrs. Tuscany, and no evidence that the defendant's estrogenic hormone solution or the vial itself contained any impurities; at most, the record merely raises a surmise or suspicion that there might, perhaps, have been some impurity in the drug or vial. On the other hand, the evidence is just as strong against the plaintiff that some infection was injected into Mrs. Tuscany's arm by her self-injecting the drug by hypodermic needle, as to cause injuries."

### *They are Still Liver Pills*

In another Federal Trade Commission case which continued over a long period of years—almost ten—and cost the defendant company a very large amount of money—$500,000—the company finally won its point and the court reversed the FTC order. In May 1943, the FTC issued a complaint against Carter's Little Liver Pills, claiming that these pills, which were labeled a "laxative aiding bile flow," did not stimulate the flow of bile, and therefore were not entitled to be named "liver pills."

Four years later a trial was completed and the case was argued before the Commission. Three years after that, in 1950, the Commission requested a reargument. More than a year then elapsed before the Commission finally issued its order on May 28, 1951, banning all advertising claims regarding bile flow and ordering the word "liver" dropped from the name of the product. The company appealed from this order to the U. S. Circuit Court of Appeals, and this court has reversed the FTC order with the concluding statement: "We think the rulings of the examiner tended to be insufferably technical, where not wholly erroneous."

Here is a case in which a company was required to spend a half million dollars to defend itself against charges which were unfounded. A lesser company without the resources of Carter, or without so much at stake, would have been forced to yield to the dictates of this body even though these dictates were unwarranted by the record of the case. A similar situation existed in the case of those companies which marketed headache remedies containing acetanilid. It will be remembered that both Stanback and B-C yielded to the dictates of the FTC and changed their formulas so as to eliminate the acetanilid to which the FTC objected. Also it will be remembered that Emerson's Bromo-Seltzer was also cited but that they refused to yield. Because they had the resources and were willing to spend upwards of a million dollars defending their position, Emerson lived to see the day when a newly constituted FTC settled the case in Emerson's favor. And it must also be considered that in addition to the costs of these cases to the companies involved, the taxpayer also bears the brunt of the huge expenditures by the government in prosecuting these unwarranted charges.

### *Zam and Other Products*

Advertising claims that Zam is of value in correcting freckles, pimples, acne or red patches, are to be discontinued under a stipulation signed by the Juel Company and its officers, Chicago. Under the stipulation, claims for other products of the company are to be discontinued. These are:

That "Cream Deodorant 1 and 1" stops underarm odor or perspiration or keeps underarms dry, except when used daily. That Smooth Oil Shampoo is of value in cases of dry, brittle, dull, drab or faded conditions of the hair. That Magic Rolling Massage Cream has a cleansing effect on the pores, helps remove blackheads, retards an oily or greasy skin, brightens sallow or dark skin, improves the appearance of blotchy skin or has any effect on the complexion except through helping to remove dirt. That Juelene Pomade or Juelene Liquid has any effect in increasing the length of the hair, in stimulating hair growth, or in preventing brittle ends from breaking off, promotes healthy hair or has any effect on dry hair or dry scalp except to lubricate it.

Also that Sulphurized Beauty Cream aids in clearing the skin of blackheads, skin eruptions, adolescent skin irritations or blemishes. That Complexion Beauty Cake has any effect in preventing wrinkles, changing skin texture or in toning the skin. That complexion Bleach Soap has any effect in bleaching or whitening the skin, causing exfoliation of the skin, or affording a finer or brighter complexion. That Hope's Liquid Bleach has any effect in lightening or bleaching the skin, causing exfoliation of the skin or in bringing out hidden, lovely or natural complexion. That Scalp Preparation No. 5 has any beneficial effect in cases of itch, scabs or sores or scales except to relieve scales due to dandruff. That Juel Hot Oil Treatment has any effect in increasing hair length or hair growth or in retarding dry hair, brittle hair or breaking-off of hair.

The company also agreed to discontinue representing that Charmer Perfume or any other article is free when in truth and in fact it is *not* a gift or gratuity or is *not* given without requiring the purchase of some other article of merchandise or requiring the performance of some service inuring, directly or indirectly, to the benefit of the Juel Company.

# Drugs in Agriculture

*by Milton A. Lesser*

We believe that the pharmaceutical industry can become as important to agriculture as it is in the maintenance of human and animal health. It is our contention that many problems of plant pathology, nutrition, growth and immunization can be solved by the use of methods and materials developed in the pharmaceutical laboratory. The growing parallelism between pharmacologic and agricultural research has strengthened this view.

The practical applications of such research must result in more and better crops. The need for coordination between the pharmaceutical and agricultural industries is readily apparent. It is self-evident, for example, that we have just so much land on which to produce crops and livestock. This is an important consideration in view of the fact that the nation's population is growing by more than 2,000,000 persons per year. Thus, as estimated by Weiss,[1] for every four people sitting down to a meal in 1950 there will be one more person at the table in 1975.

The task of agriculture is to fill his plate too. Since it is not possible to greatly increase the available arable acreage, it is necessary that the cultivated areas be made to produce more food and feed crops. The pharmaceutical industry can contribute to the solution of this problem in two ways. First, it can help to provide means to combat plant diseases, and, second, it can develop substances that will improve plant growth.

Our food and feed crops are constantly being subjected to attacks by diseases which, despite our efforts, seem to be increasing in number and destructiveness.[2] According to one conservative estimate there are about 7,000 different fungi, 175 bacteria and 163 viruses whose effect on agricultural crops is of some economic significance. Attention is also called[3] to the 77 known diseases of wheat in America, 112 of corn and some 200 of the apple. From the financial viewpoint, fungi and other plant diseases are said[1] to cost us $4,000,000,000 per year.

Pharmacologists have long known, and agriculturists are beginning to realize, that the way in which a drug or chemical is applied will often have a marked influence on its efficacy. Moreover, there is a marked similarity in the way in which drugs may be administered to animals and plants. The techniques developed in treating human ills may often be applied to the control of plant diseases.

Thus, oral administration of a therapeutic substance

to a human would correspond to the application of a drug to the soil for absorption via the root system of a plant. According to Mitchell and his colleagues,[4] several investigators have shown that the roots of plants such as oats, lettuce, soybean, and lima bean can absorb antibiotics such as streptomycin, aureomycin, and griseofulvin from aqueous solutions and translocate them to the leaves and stems.

However, in order to obtain more direct, more certain, and faster action, drugs are often administered by other routes. For example, a physician may administer certain substances by the aerosol or inhalation method. This not only provides an immediate effect on a respiratory tract infection, but in some cases also permits absorption of the drug into the blood stream via the lungs.

Aerial sprays applied to the leaves and stems would constitute the counterpart of the procedure in plant treatments. As remarked by Pirone,[5] it is now known that nitrogen, potassium, phosphorus, magnesium, manganese, copper, zinc and boron can all be taken into a plant through its foliage. He observes that materials applied directly to the leaves become almost immediately available since they must travel a very short distance to get to the point where they are used by the plants.

A practical application of this knowledge is seen in the use of soluble iron salts in sprays to deepen the color of rose foliage. In work done at the Pennsylvania Agriculture Experiment Station,[6] it was found that ferrous sulfate, ferric nitrate, ferric chloride, and ferrous ammonium sulfate in 2 per cent concentrations applied as sprays produced the best greening. In this connection, it may be mentioned that ferrous sulfate and other iron preparations are used in the treatment of iron-deficiency anemia in humans.

The feasibility of direct application of active agents to the stems of plants, comparable to the use of ointments on humans and animals, is indicated in the pioneer work of Mitchell, Zaumeger and Anderson.[4] They reported that absorption and translocation of an antibiotic by an above-ground plant part is quite possible; enough of the antibacterial agent being absorbed to retard or inhibit baceria disease. In testing these substances, they were applied to the stems in the form of a one per cent concentration in a mixture of polyoxyethylene sorbitan monolaurate (Tween 20) and lanolin. Of course, the use of lanolin as a vehicle to apply plant growth relations or "hormones" is a well-established agricultural procedure.

When a more direct, faster drug action is desired in treating humans, the physician may inject the therapeutic substance; intravenous administration often being employed to provide a speedier effect. The same principle is employed when materials are injected into plants to be taken up by the sap-stream. Such methods may be used, for instance, to remedy nutritional deficiencies. Thus, iron can be supplied by injecting iron oxylate into the trunk.[7]

The potentialities of this method for combatting plant infections was indicated by Boyle[8] in 1949. At that time he reported that when penicillin was injected into cactus stems, it diffused into the nearby infected areas and killed *Erwinia carnegieana*, the organism responsible for the necrotic lesions. More recently, the possibility of injecting an antibiotic into the trunks of fruit trees suffering from fire blight and peach brown rot has been studied and found practical under experimental conditions by research workers in the Department of Agriculture.

As yet, the animal embryologist has nothing to offer that is comparable to modern agricultural seed treatment. Once a human or animal ovum has been fertilized, little can be done other than the maintenance of a good prenatal environment by keeping the mother healthy. Seeds, however, can be treated with mercuric chloride, formaldehyde, hydrogen peroxide and other agents to make them more resistant to fungi and bacteria; thereby providing them with a better chance for

*(Continued on page 260)*

BLACK STAR PHOTO

# Uncertainty of Fair Trade

A reading of the decision handed down by U. S. District Court Judge J. Skelly Wright in the Eli Lilly action against Schwegmann Brothers Giant Super Markets, while granting an injunction to Lilly, indicates clearly that Schwegmann "has a case." The judge makes many points to stress this, and anyone reading his decision realizes that he feels that the matter should be passed on to the U. S. Supreme Court for final adjudication.

The decision briefly reviews the history of resale price-fixing down to the U. S. Supreme Court decision in the case of Old Dearborn v. Seagram Corporation in 1936 in which the court upheld the constitutionality of the state fair trade acts. With regard to this decision the court observes:

"After Old Dearborn in 1936, however, fair trade legislation stood unchallenged or approved in all states until recently, when the Supreme Courts of Florida and Michigan, while respecting the Old Dearborn decision as to the constitutionality

of fair trade legislation under the federal constitution, held the fair trade laws invalid under their state constitutions. These two decisions together with Schwegmann v. Calvert, supra, indicate that the whole subject of fair trade legislation may be in line for critical examination."

Judge Wright continued:

"Defendants assert that the Louisiana Fair Trade Law coupled with the McGuire Act gives the plaintiff the uncontrolled and unappealable right to fix the resale price of its products in spite of the fact that the plaintiff has parted with the ownership of its products and even though the products are in the hands of a retailer who has specifically refused to sign retail price contracts with the plaintiff. Defendants contend that these statutes constitute an unlawful delegation of legislative authority to private persons and deny the defendants due process of law in that their right to dispose of merchandise which they own is restricted by private interests. Defendants further contend that in Schwegmann v. Calvert, supra, the Supreme Court recognized fair trade statutes as authorizing coercive price-fixing and thus impliedly overruled its prior decision in the Old Dearborn case.

"That the delegation to private persons of the uncontrolled and unappealable right to fix resale prices of merchandise owned by another is unconstitutional is clear beyond cavil. Consequently, if we were to assume that the merchandise in question was fully owned by the defendants without any residual right inhering in the plaintiff, our task would be an easy one. But the Supreme Court in Old Dearborn said that while the retailer of a commodity bearing a trade-mark, brand or name may own the commodity, the trade-mark, brand or name and the good-will which inheres therein belong to the manufacturer, that this good-will is property which the manufacturer has a right to protect and the price restriction pursuant to a state fair trade act 'is an appropriate means to that perfectly legitimate end, and not as an end in itself.' Perhaps after twenty years of experience under fair trade acts, the Supreme Court may conclude that the real purpose of these acts is not to protect the good-will of the manufacturer, and that price-fixing under these acts is not an appropriate means to that perfectly legitimate end, but is in fact an end in itself. In other words, it may well be found that the real purpose of fair trade legislation is to protect the retailer from competition with another retailer who, because of his efficient merchandising methods, is able to reduce his distributive costs and consequently his retail prices. That is a matter, however, which addresses itself to the Supreme Court.

"While the decision in Schwegmann v. Calvert, supra, may reflect a changing attitude toward price-fixing pursuant to fair trade acts, there is nothing in that case, even by dicta, which indicates that the Supreme Court has receded from its position, outlined in Old Dearborn, that good-will is a property right which is properly protected by price restrictions fixed pursuant to the fair trade acts. This point simply was not at issue in that case. It is true that in Schwegmann v. Calvert, supra, the Supreme Court characterized price-fixing as to nonsigners as 'coercive' thereby indicating that it would no longer follow Old Dearborn insofar as that case held that the acquisition by a retailer of a commodity covered by resale price restrictions is an implied assent to these restrictions. However, the good-will property right protection of Old Dearborn remains intact. It is dispositive of the issue here."

Judge Wright points out that:

"There is no suggestion in the record nor in the pleadings that defendants are using the plaintiff's products as "loss leaders." The evidence is uncontradicted that the defendants made a fair profit in all sales of plaintiff's products below the fair trade prices. The evidence is also uncontradicted that the defendants sell the products of most, if not all, of plaintiff's competitors below the fair trade price. The defendants simply are efficient retailers who pass on the fruits of that efficiency to the buying public in the form of lower prices. Enforcement of the fair trade acts would protect other retailers from this sort of competition."

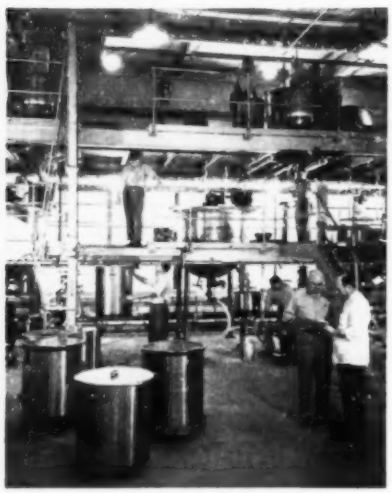
With regard to the damage done to manufacturers by cut prices and the reason why an injunction is necessary Judge Wright said:

"On the question of irreparable injury there is an apparent unanimity of

*(Continued on page 257)*

# Rubinstein Plant

New $4 million Helena Rubinstein plant and laboratories recently completed at East Hills, Long Island, covering 8 acres. It will triple production over firm's former plant in Long Island City.



Simplified methods of production are employed. (1) Special gravity feed flow of materials. (2) Each batch is siphoned off and tested. (3) Flowing from 2nd floor manufacturing area, liquid preparations are routed down to main floor by large hoses. (4) End of line for finished product. Jars are topped and packaged, ready for crating.

New techniques in modern industrial decor and sculpture are employed by industrial designer Tom Lee and sculptress Taki Camille (foreground) at Rubinstein plant.

Last month, Helena Rubinstein opened her new $4,000,000 structure at East Hills, Long Island. Located on a 20-acre site, with parking space for 200 cars, a railroad siding, additional loading facilities capable of accommodating 45 trucks at one time, the two-story building covers eight acres.

All offices are sound proof, sun proof, and air conditioned. Fluorescent lighting is employed throughout and special attention has been directed to employee facilities, which include a softly decorated cafeteria enclosed on two sides in glass and a roof terrace.

It is expected that production at the new plant,

which will employ over 1,000, will triple that of the former Rubinstein at Long Island City. This plant, which is the seventh in the chain of manufacturing centers which Madame Rubinstein has established throughout the world, will supply all products for the American market, and will also supply the Gourielli line of cosmetics for men. This line is named after Georgian Prince Artchil Gourielli whom Madame Rubinstein married in 1938. Other Rubinstein plants are located in France, England, Australia, South America, and Canada. New plants are now under way in Italy, Germany, and Switzerland, and plans are being made for new factories in New Zealand, Australia, and Toronto, Canada.

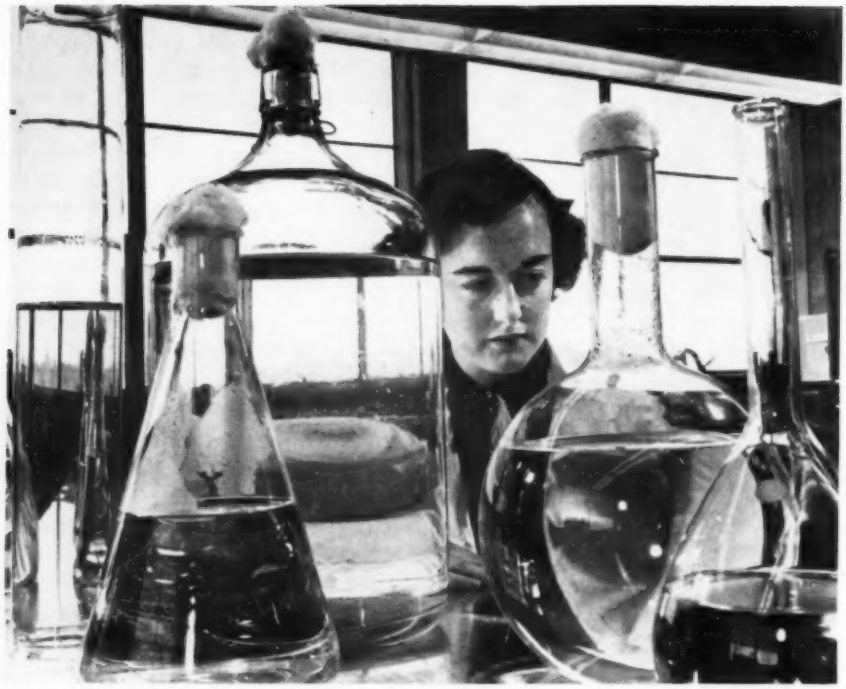
Some features of the new plant are extensive storage facilities to protect the delicate raw materials and expensive preparations used in the products, such as the pure silk employed in Silk Screen Face Powder and Silk-Tone Foundation. Fully weather resistant containers for preservation of essential oils. Underground storage tanks with 10,000 gallon capacity for storage of mineral oil and alcohol, which are easily reached for outside loading, and equipped with metering pumps which automatically measure drainoffs to the fraction of a gallon for speed-up mixing of formulas. Mixing vats are located on the second floor, adjacent to raw materials' storage space. After mixing, finished products flow by gravity through easily moved plastic piping to bottling machines and belt-line assemblies on the floor below.

Madame Helena Rubinstein, founder, at entrance to new plant which swung into full operation with a formal opening January 12.

Chemists test samples of beauty products on spectrophotometer for true color. All subsequent batches of same product are put through test and must match original exactly, or be reprocessed.

Modern conference room of laboratory and plant. Left to right. Jerome Levande, comptroller; Roy Titus, vice-president; Madame Rubinstein; Horace Titus, her son; Oscar Kolin, vice-president; and Dr. Masters, of the Rubinstein factory.

The very latest in office equipment, plus sound proof ceilings and soft pastel walls create a pleasing atmosphere for office workers.



COURTESY LEVER BROTHERS COMPANY

# Drug Metabolism*

*by Bernard Brodie, Ph.D.*

CHIEF, CHEMICAL PHARMACOLOGY BRANCH, NATIONAL INSTITUTES OF HEALTH, NATIONAL HEART INSTITUTE, PUBLIC HEALTH SERVICE.

The medical profession gradually learns, by clinical experience, how best to administer a drug so that they may derive the maximum therapeutic effect. Certain drugs, such as digitalis, have taken many decades of experience. In recent years, it has been possible to take shortcuts to replace the old method of clinical trial and error. The availability of these shortcuts is of prime importance in the development of new therapeutic agents; otherwise, many a good drug might be discarded to the pharmaceutical ash heap. The modern approach is actually based on a rather simple premise; that is, that the pharmacological effect of a drug is related usually to its plasma level. This approach requires a fundamental knowledge of the fate of a drug in the body in order to elucidate these factors which affect the drug plasma level, and obviously requires the development of precise micromethods of analysis, which have been possible in many cases in recent years only due to the recent development of precise methods of measurement.

Why are we interested in or why do we talk about the plasma level rather than the level at the site of action? Well, of course, this is a practical consideration. One cannot measure the concentration at the site of action of the drug because it might be anywhere from the central nervous system to the liver. But we talk about the plasma and we can use the plasma as representative of the concentration at the site of action since the plasma is the physiological means of exchange in the body. All drugs have to pass through the plasma to get to the tissues, they have to leave through the plasma in getting from the tissues, and, at a state of equilibrium, the concentration in the plasma is perforce the concentration at the site of action. If one

*Address at Mid-Year Meeting, American Pharmaceutical Manufacturers Association, Tuesday, December 9, 1952, at the Waldorf-Astoria, New York.

raises the plasma level, one raises the concentration at the site of action. If one lowers the plasma level, one lowers the concentration at the site of action. Therefore, one can say that the concentration in the plasma is proportional to the concentration at the site of action, or, in other words, it is proportional to the pharmacological effect of the drug.

Therefore, looking at it in this way, a desirable dosage regimen is one that will rapidly elevate the plasma level to the required therapeutic concentration, and maintain it there long enough to achieve the desired therapeutic effect.

There are a number of factors which determine the plasma level of the drug, and a study of the operation of these factors is of prime importance in the planning of a therapeutic regime. The first of the factors which affect the plasma concentration of the drug, and therefore affect not only its activity but also its duration of action, is the absorption of the drug. When a drug is given intravenously, intramuscularly, or subcutaneously, there is usually no problem in the matter of absorption, but these methods of administration are not practical when repeated dosages of the drug are required. Therefore, oral administration is most often used, when it is at all possible. But even with oral administration, there are many difficulties.

Certain drugs are not absorbed at all if given orally, for instance, heparin. The anticoagulants are not absorbed when given orally. It is because of the fact that heparin is not absorbed when given orally that all the dicumarol derivatives have been developed. The ones that are given orally, such as dicumarol, present considerable difficulty in control. It is really too bad that derivatives of heparin have not been found which may be given orally. You have all heard of the possible role of heparin in the control of arteriosclerosis, and while these studies are still in the formative stage, one can say that if a heparin substitute is ever going to be of any value in the treatment or prevention of arteriosclerosis, it will have to be one that can be absorbed when given orally.

Some drugs are not stable in the gut; for instance, diabenamine and its derivatives would be extraordinarily useful agents in the treatment of peripheral vascular disease and in some types of hypertension if it were not for the fact that they are not stable in the gut, and the fact that they are unstable in the gut means that on a single dose of one of these derivatives, one never knows how much of the compound is going to be absorbed in a changed form, making it extremely difficult to control the dosage.

Finally, we come to compounds that are very insoluble in the gut, and one of the reasons why dicumarol is so difficult to control therapeutically is because it is so insoluble in the gut that it absorbs slowly and irradically, making it rather difficult to control the dosage.

Another factor which we see here is the excretion of a compound through the urine. It is only in recent years that it has become evident that actually this particular mode of elimination of the drug, this particular control of the plasma concentration, is really of relatively minor importance. Very few drugs are excreted from the urine. Most drugs are almost entirely metabolized in the body. One rather extraordinary difference which proves the rule is the very useful drug, priscoline, for peripheral vascular diseases, which, strange to say, is excreted from the urine entirely unchanged. Other examples are procaine amide and the sulfonamides, which are entirely or almost entirely metabolized in the body.

Then there is what I call "Tissue depot," or localization in tissues. It is probable that few drugs would remain in the body long enough to have a significant effect at all if it were not for the storage depots in the body that nature has provided us. Most drugs with a long duration of action are characterized by extensive and reversible tissue localization. This provides a protection for the drugs and serves to slow the rate of metabolic transformation and urinary excretion while withdrawing the drug from the body fluids and, of course, withdrawing it from contact with the enzyme systems and the liver.

Drugs are localized, actually, in a number of different types of body depots. One type of body depot is the fat in the body. Such drugs as dibenamine, where a single dose may last for days, last only because they are extensively localized in the fat and very slowly given out to the tissues. Drugs like the intravenous barbiturates, which I may have a chance to talk about later, owe many or most of their peculiar pharmacological properties to their extensive localization in the body, and therefore remain in the body for a long time. Other types of body depots are in various types of body proteins. Beyer 205 is a famous agent developed by the Germans for sleeping sickness, which is extraordinarily firmly bound to various proteins of the body, leaving the plasma protein, and it is so firmly bound that its concentration is extremely small, with the net result that it is very slowly metabolized, so a single

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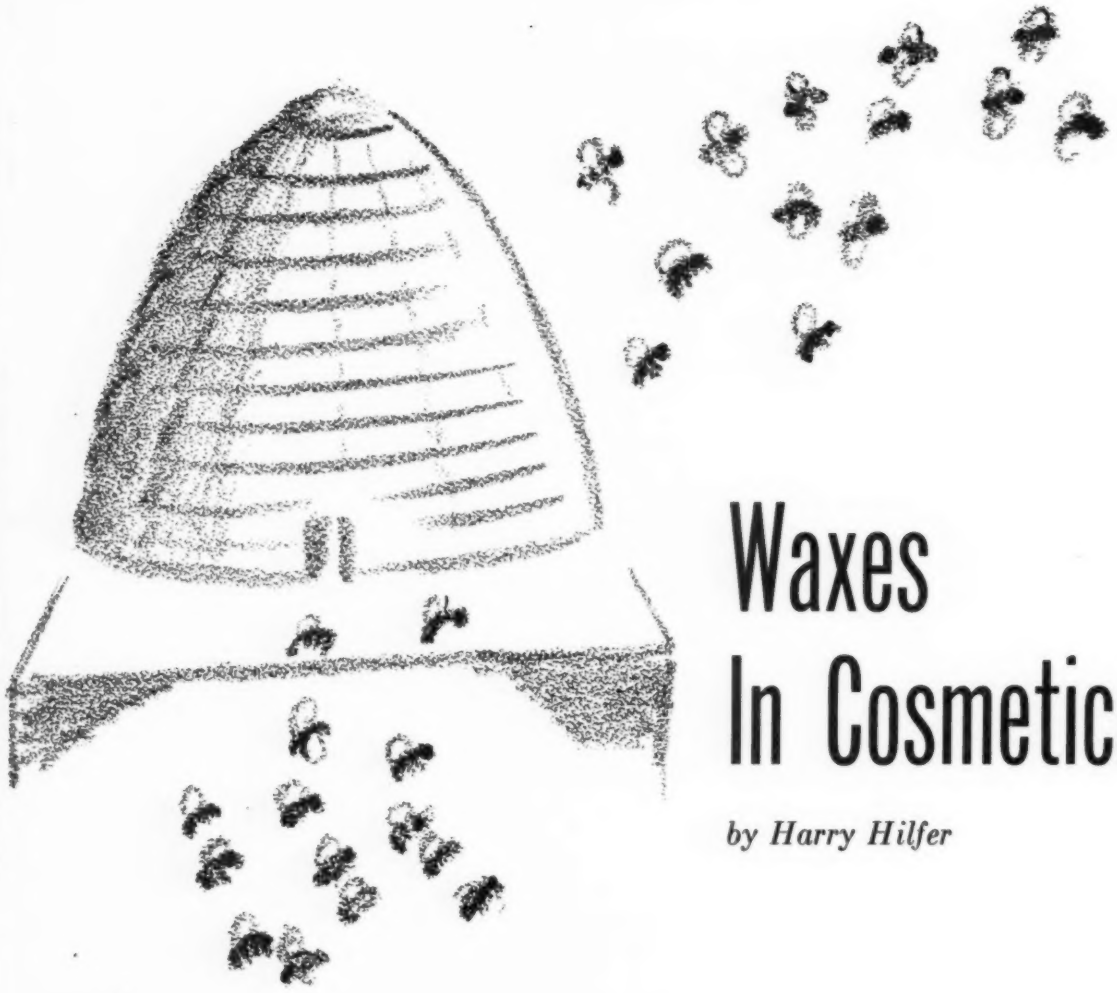
COURTESY J. T. BAKER CHEMICAL CO.



# Waxes In Cosmetics

*by Harry Hilfer*

The variety of different waxes available commercially has risen to a fair size by the introduction of synthetic materials whose functions are much the same as those of the natural waxes. Though these synthetic substances are not waxes, within the strict definition of a wax, we will discuss them as well as the natural waxes because of similarity in their function.

By definition a wax is an ester of a monohydric alcohol and a fatty acid. Usually both the alcohol and the fatty acid contain at least 12 carbon atoms and may run as high as 32. Such a definition does not include hydrocarbons as waxes, but paraffins are used in large quantities in cosmetic production and are generally thought of as waxes, so they will be included in our trade wax classification.

Beeswax is, perhaps, the best known of the cosmetic waxes. It has a fairly high melting point of about 65° C. and has a fairly small crystalline structure. It consists of a number of different constituents the principal ones being cerotic acid, a hydrocarbon, ceryl alcohol and the ester of ceryl alcohol and palmitic acid. Cerotic acid—a 26 carbon fatty acid—is responsible for the emulsion formed when beeswax is treated with borax, but the other constituents mentioned, certainly the ceryl alcohol, contribute to the stability of the emulsion formed. Beeswax is, therefore, used in cold creams and cleansing creams in conjunction with borax. The amorphous character of the wax is transmitted to the cream produced as evidenced by the softness of the cream and the look of "break" when pressure is applied to the cream surface.

Beeswax used in lipsticks has much the same quality. It is capable of stiffening without hardening and introduces little of the thixotropy which may be desired. It does, however, raise the apparent melting point a good deal. Beeswax is available in the unbleached and bleached forms. The white bleached wax is used in creams because of its color while the yellow may be used in lipsticks. The yellow wax seems to have a more pronounced amorphous quality than does the white but it does not have as pronounced a fracture and seems to be more plastic.

Spermaceti is a wax obtained by expression from the sperm oil extracted from the head of the sperm whale. It was thought of as being an almost pure cetyl palmitate, but more recently it was demonstrated that it

was a mixture consisting largely of cetyl myristate in conjunction with smaller amounts of the laurate. It is a highly crystalline material with a melting point of about 45° C. Its greatest usage in cosmetics is in creams and it is still being used in cold cream preparations. This substance possesses properties which are almost the direct opposite of those possessed by beeswax. In spite of its relativity low melting point it is capable of stiffening products in which it is incorporated and endowing them with a false rigidity which may be easily broken with pressure. Its use is indicated when such a thixotropy is desired. It may also be used in lipstick where much the same property is desired, except that its introduction causes a drop in the apparent melting pot. Spermaceti, further can introduce a satin-like smoothness, highly desired in most preparations. Its use for that purpose has largely been superceded by the introduction commercially of cetyl alcohol derived from spermaceti.

Cetyl alcohol is not strictly speaking a wax, but since it has melting point of 50° C. it is used in much the same manner as our waxes. It is a 16 carbon straight chain alcohol used in creams and lotions to introduce a satin-like "feel" to the product and to increase viscosities generally. In this connection, it should be pointed out that cetyl alcohol is an excellent emulsifying auxiliary since it greatly enhances the stability of most emulsions, but it is prone towards thickening of the emulsion sometimes to a point where it will not pour. Some shaking before use causes the emulsion to become mobile however. If used sparingly it behaves as a good viscosity builder in addition to its stabilizing effects.

Stearyl alcohol, the 18 carbon alcohol, is comparable to cetyl alcohol except that it thickens more readily. It has a somewhat higher melting point (about 58° C.) and crystallizes more readily from solutions in a fixed oil than does the cetyl alcohol.

Carnauba wax has the highest melting point of any of the natural waxes. Its use in cosmetics is almost exclusively confined to lipstick formulation and manufacture. Lipstick, as is well known, is not a true solution of waxes in oils; it resembles rather an emulsion in that it contains two distinct phases, oil and wax. The system may best be described as consisting of numerous cells whose sides are composed of the waxes while the oils lie inside. On application, the pressure on the wax walls breaks them and allows the oils to reach the lips. Since the lipstick must retain its rigidity, these walls should be strong enough to withstand incidental handling but weak enough to break down with a minimum of pressure used in application. Further the melting point of the waxy cell will more or less dictate how well the stick will withstand higher temperatures. The introduction of a small percentage of carnauba wax into the lipsticks causes the apparent melting point of the stick to rise and a resultant increase in rigidity is also apparent. However, too large a percentage could prevent proper application from taking place because the pressure needed may be too greatly increased. In most lipsticks a mixture of waxes is usually used to prevent too great a strengthening of the walls although in some extreme cases carnauba wax is used to the exclusion of other waxes.

Candelilla wax, though it has a much lower melting point than carnauba, is used for much the same purpose. It further is capable of endowing the stick with a high gloss on flaming and is sometimes used because of this function.

Paraffin waxes come in a variety of melting points and the proper choice is formed by the rigidity required. They were used previously in creams but are used to a fair extent in lipsticks as well. They are characterized by their relatively large crystalline structure and therefore may be used to induce a marked thixotropy without necessarily increasing the apparent melting point. Their introduction into cold creams for example would

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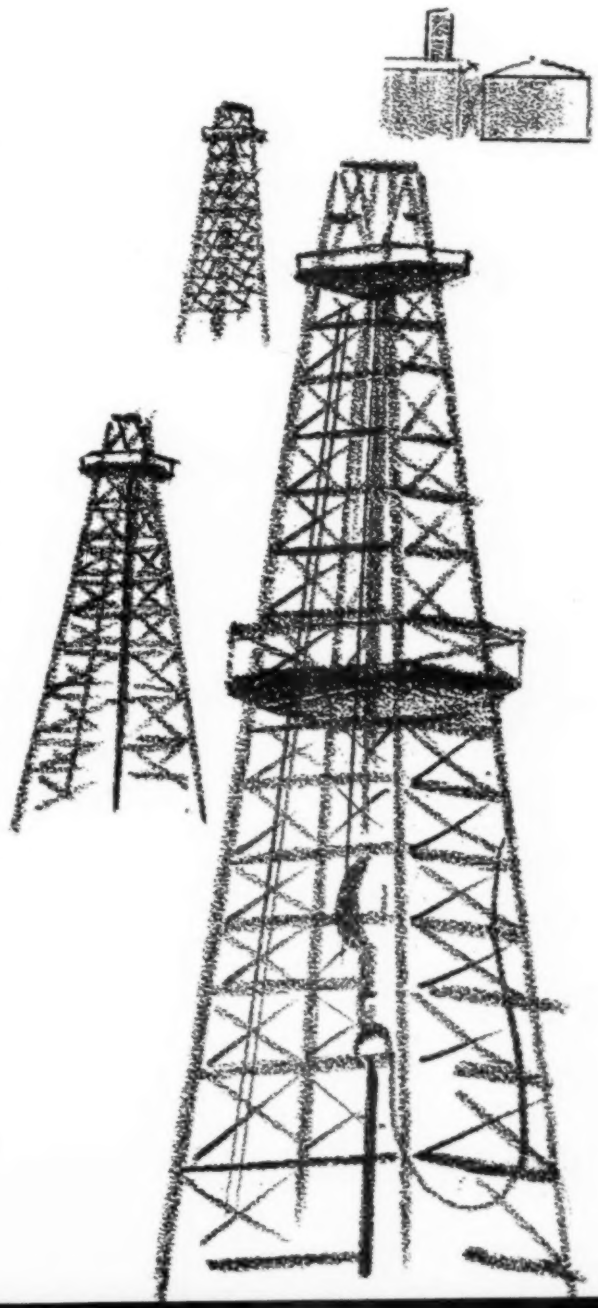


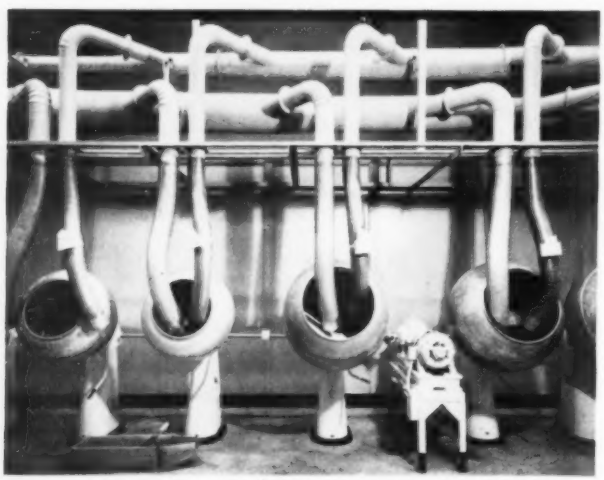
# Air Conditioning in Pharmaceutical Manufacture

*by M. M. Harmon*

AIR CONDITIONING ENGINEER
THE UPJOHN COMPANY, KALAMAZOO, MICHIGAN

The Upjohn Company's new Portage manufacturing plant, located a few miles south of Kalamazoo.

Battery of coating pans in the hard-filled capsules coating section. One flexible tube extending into each pan delivers low humidity air for the drying operation; the second tube is part of the dust control system.



Modern drug manufacturing machinery takes a multitude of shapes and sizes to process pharmaceuticals efficiently from raw material to finished product. And, although seldom considered as such by the layman, air conditioning equipment ranks as a foremost process tool with the pharmaceutical operations engineer. Without it, his company would not long be a front-runner in the highly-competitive drug manufacturing business.

### Pharmaceutical Dry Products Manufactured Under Stringent Air Conditions

Those portions of pharmaceutical processing which include handling of powders, from storage and mixing through to sugar-coating the compressed tablet, are perhaps the most critical air conditioning-wise, particularly as regards humidity, in over-all ethical drug manufacture. By their very nature, dry powders are extremely hygroscopic. If permitted, during any stage of their production, these powder granules will absorb moisture from the air when the amount of water vapor in the air is not in equilibrium with the moisture desired and already contained in the powder. A resultant lumpy and discolored powder would be unavoidable, causing difficult subsequent processing operations, but,

more important, lessening the product's sales appeal to doctors and pharmacists.

### Examples of Dry Product Handling

Obviously, a powder mixing operation is directly concerned with the humidity in the room air. Too, compression of the powders by automatic rotary tablet machines is affected by excess room humidity, as moist granulations stick to die faces, resulting in imperfectly-formed tablets.

Many compressed tablets are sugar-coated to make more palatable. Without a supply of closely controlled dry air to the rotary pans, shown on page 180, quality control becomes meaningless. The finished tablet has either too little or too much moisture, creating brittleness or explosiveness, respectively. Identical reasons in stating a case for a low humidity air supply applies to the sugar-coated tablet, low-temperature drying ovens, where the product-finishing operation occurs.

### Broad Coverage by Air Conditioning

The Upjohn Company's new Portage plant at Kalamazoo, Michigan, has an intricate air conditioning system providing more than 100 different zones of varying temperature and humidity, handling a total of 2,810,326 cfm of air. These air requirements range from the standard comfort conditions in plant offices to those rooms and operations where hygroscopic materials demand a relative humidity of 10 per cent or less, such as the tablet compression room.

The "why's and wherefore's" of quality control as made possible by stringent low humidity air conditions are dictated by the necessity for a top-quality product in this keenly competitive industry. Furthermore, ease of operation and optimum production are achieved with controlled air conditions. However, even should these factors not be considered, the cost of developing a new drug belittles the cost of the finest-quality processing equipment necessary to mass produce same. A manufacturer, having spent hundreds of thousands of dollars to develop a drug, would certainly insist upon the finest quality control equipment available for its production. Therefore, even with its recognized advantages, low humidity air conditioning for pharmaceutical powder processing is, relatively speaking, a minor cost item.

### Low Humidity for Tablet Compression

An excellent example of a costly drug to develop among Upjohn's products is the "Orthoxine" tablet. From the initial conception of the idea for and research on this chronic asthma relief compound to its eventual marketing elapsed a period of 14 years, a span marked with continuous effort to produce and perfect this pharmaceutical.

Illustrated herewith is the tablet compression operation for "Orthoxine." This is one of a number of actual dry product rooms within the Upjohn plant to which low humidity air is supplied by Kathabar, chemical-absorption-type dehumidifiers. Two of these units,

*(Continued on page 266)*

Dehumidifying equipment line for Upjohn's "Solu-B" departments. Electromatic filter is on the right, air washer in center background.

In the tablet compression department, "Orthoxine" tablets are compressed in the triple rotary machine at the left and are automatically counted and transferred into bottles.

Two Kathabar dehumidifiers serving Upjohn's hygroscopic dry-product requirements for low humidity air. Shown are the air washer units having an air capacity of 12,500 cfm each.

COURTESY HELENA RUBINSTEIN

# The Neutralizer in Cold Waving*

*by Ross Whitman*

VICE-PRESIDENT IN CHARGE OF RESEARCH, RAYETTE, INC.

I should like to acknowledge at the outset the work of Messrs. Milton G. Eckstrom, Edward J. Murray, and Einar B. Birkelo, all of Raymond Laboratories, in carrying out the experiments described below.

This paper will be divided into three sections. In the first I want to talk about the mechanics of waving hair, as we now understand them. In the second I shall describe a series of experiments comparing some of the different neutralizing methods that are possible. In the third, if time permits, I would like to make some comments on the status quo of permanent waving.

Consider a single strand of straight virgin hair hanging free in a completely dry atmosphere. This, I think you will agree, is our zero point—the beginning of all our endeavors. There are very many, very complex forces which determine the straightness of this strand of hair, but for my purpose I can divide them all neatly into three groups. The first group will consist of those forces which are water-labile. If we wet this single strand of hair with water, wind it on a rod and then dry it while it is on the rod, the strand will acquire a curl having roughly the diameter of the rod. As long as this curled strand of hair is kept in a dry atmosphere it will remain curled, but if it is exposed to moisture, it will rapidly go back to its original straight condition. Because in real life hair is never kept in a dry atmosphere for any appreciable length of time, this type of curl is commonly called a "temporary set." For the same reason, in our laboraories, we commonly called the water-labile forces "short range forces."

Since these short range forces are able to overcome the remaining forces in our strand of hair, giving it a curl until they are themselves undone by subsequent exposure to moisture, it is manifest that they amount to more than half of all the forces with which we are concerned. Entirely arbitrarily, I am going to assign the Group One forces a rating of 70 per cent.

When our water-set strand is subsequently exposed to moisture, it returns to its original straight condition. This is caused by the water stable forces which I am going to place in Group Two. These forces are not disrupted by water (they lived through the temporary set treatment). They are "permanent" in the terms of

*Delivered before Scientific Section, Toilet Goods Association, Dec. 10, 1952

hair waving chemists. In the presence of moisture they are powerful enough to persuade the Group One forces to relax their grip. When we wave hair permanently, we do it by altering the Group Two forces so that instead of working to pull the strand straight, they work to pull it into a curl. These forces, in our laboratories, we commonly describe as "long range forces." They are in fact quite stable to chemicals other than oxidizing and reducing agents. Arbitrarily I assign these forces a rating of 20 per cent.

To avoid a number of difficulties which will already have occurred to many of you, I hasten to add a third group of forces. This group of forces is stable both to water treatments and to treatments with such mild reducing agents as cold waving lotions. Since this group of forces is inert, remains unchanged during waving processes, and is in a minority (it must be less powerful than the Group Two forces which are able to assert a permanent undulation in the hair), I will not refer to it again (unless I am driven to in the discussion). The Group Three forces are ranked 10 per cent of the total.

The group Two forces—those which are stable in the presence of water but become labile in the presence of mild reducing agents—are those which we struggle with in permanent waving. They are governed by certain of the cystine linkages in keratin. As the cystine of the hair is reduced to cysteine, these forces lose their stability. When the cystine content of normal hair has been reduced from about 16 per cent to about 9 per cent, the Group Two forces may be regarded as being nonexistent. If hair chemically reduced to this extent is wound on a rod, and if the Group Two forces are restored by rebuilding the destroyed cystine linkages while the hair is so wound, the new Group Two forces will support the new configuration. This step—rebuilding the Group Two forces while the hair is in a desired configuration—is the process of permanent waving as it is carried out today.

While the Group Two forces vary as a portion of the cystine content varies, we do not believe that they can be attributed simply to the cystine linkage. Indeed we now think that the cystine bond does not contribute directly *itself* to the curl in waved human hair. Rather it seems to us more probable that these reducible cystine linkages act to protect other bonds in their vicinity—polar and hydrogen and actual physical steric entanglement—by preventing the separation, in swelling, of the polypeptide chains.

Now, see what this does to our semantics. When we apply to hair that chemical which we all call the "waving lotion" we are destroying the Group Two forces that strive to hold it straight. When we apply the chemical which we call the "neutralizer" we are reforming a new set of Group Two forces which will struggle to hold the hair in its new configuration. The "waving lotion," then, is in fact an *unwaving* or relaxing lotion; the "neutralizer" is in fact the waving lotion. This permits me to assert that it is not possible to wave hair without neutralizing it, because this is the same as saying that it is not possible to wave hair without waving it. Strictly, there is no such thing as a "no-neutralizer permanent."

We have found that the direct cysteine analysis of hair is a highly accurate method of determining the amount of Group Two forces present. The Group Two forces are substantially destroyed when the SH analysis exceeds about 0.5 mM per gram of hair. The Group Two forces are substantially restored when the SH analysis gets down to .05 mM per gram of hair or lower. If, when a permanent wave is completed, the SH analysis shows cysteine in excess of .07 mM SH per gram of hair, we can prophesy with confidence that the wave will relax excessively in the weeks to come. This is, of course, entirely consistent with a failure to restore the Group Two forces while the hair is on the rod.

A second tool which is widely used by all of us is the load-elongation index. In the experiments which I am about to describe hair fibers were stretched 20 per cent in water and then allowed to contract again, all at a constant speed. The hysteresis curve was plotted automatically. The strand was conditioned for twenty-four hours, and then chemically treated as will be described. At the end of the treatment the hysteresis curve was plotted again. The ratio of the areas under the second curves in the areas under the first curves gives us our "20 per cent index."

I am perfectly willing to concede that this is an arbitrary way to handle our data. However, after many thousands of such determinations we have acquired a long background for the interpretation of results so expressed. A 20 per cent index of .6 to .8 is commonly achieved on waved hair. A final index of .5 or lower indicates a significant damage. On reduced hair, in which the Group Two forces are destroyed, the index falls away to .2 or so.

### Experimental Method

The series of laboratory experiments which I am about to describe were performed as follows. Tresses of blended virgin hair were wrapped on rods with water and then dried. Calibrated load-elongation fibers were mounted in each tress. Fibers were chosen for this which were equal in length to the fibers of the tresses. Both the tresses and the fibers for any particular experiment were prepared from the same swatch of hair. The original calibration was carried out as close to one end of the fiber as possible. The calibrated fibers were then mounted in the tress in such a manner that the calibrated portion was at the distal or tip end of the tress. At the conclusion of the experiment the fibers were remounted on cellulose acetate tabs in such a manner that the originally stretched portion was restretched. The 20 per cent elongation cycle was performed at a rate of 6.76 per cent per minute. Four load-elongation fibers were used per condition (although in some cases there were only three due to breakage).

The sulfhydryl analyses were performed in duplicate by our "N.Q." technique. This involves a direct de-

*(Continued on page 221)*

EWING GALLOWAY PHOTO

# The Medical Director and Sales Promotion

*by Charles E. Dutchess, M.D.*

VICE PRESIDENT AND MEDICAL DIRECTOR,
SCHENLEY LABORATORIES, INC.

Sales promotion is not commonly regarded as a function of primary concern to the medical director of a pharmaceutical manufacturing firm. Nevertheless, a moment's consideration of the important role of sales promotion in the success or failure of a company will demonstrate its vital concern to every executive.

A drugstore customer hands the pharmacist his prescription and receives a package of medicine. Another customer asks for a certain cough remedy, a box of vitamin capsules, or an infant food. Or, in another instance, a physician or a hospital buyer orders 100 ampoules, 1,000 tablets, or a gallon of syrup. In each of these situations there is a chain of circumstances and actions—knowledge, planning, investment, and work. The chain of forces and events has resulted in a commercial sale. To fill a certain need, a pharmaceutical manufacturer has developed a useful product, created a demand for it, and then supplied that demand.

But note that the culmination of research, product development, clinical investigation, compliance with government regulations, packaging, promotion and distribution is—a sale. A little bit of the manufacturer's product has been exchanged for a little bit of the customer's money, an exchange of something of intrinsic value for something of monetary value.

Until this simple transaction occurs, no amount of study and research, no ingenuity in compounding and packaging, no careful testing, no investment in stocking and distributing, will cause a package of a useful product to be administered to a patient who needs it. And unless this exchange of the useful for the valuable occurs often enough, the company's research, its new product studies in clinics and hospitals, its manufacturing, packaging and distribution of useful remedies cannot continue.

Promoting and selling products is not only something essential—it is hard work. It requires special talents, special temperaments, and long hours of patient application. Our detail men are the men on the firing line who are fighting our company's sales battles. We who sit at desks in the home office, with phones and files, buzzers and dictaphones, must never forget the problems and obstacles faced by our salesmen who are standing patiently in drug stores across the nation or squirming in chairs in doctors' offices, waiting for a chance to see our customers, a chance to forge that last essential link in the endless moving chain that pulls goods out and dollars in.

The medical director is naturally concerned with his company's advertising and its other promotion and sales methods. Whether or not he has any responsibility for policy and promotion plans, he is sure to be consulted on certain technical matters and on the attitudes of physicians and medical organizations. Moreover, he should always take part in the development of promotion plans and in the final approval of professional journal copy, convention exhibits and direct mail pieces.

To some extent the medical director should have the same outlook on these vital activities as the advertising manager, the sales manager, and others responsible for increasing sales. Moreover, by virtue of his technical background and professional contacts, he can evaluate promotion efforts from another viewpoint—that of the practicing physician who is confronted by medical economic problems and patients with stubborn ailments.

What, specifically, can a medical director do during 1953 as a practical contribution to increasing his company's sales?

In all probability, the company introduced some new products during 1952. Perhaps the salesmen are running into some objections no one had anticipated, being asked quesions no one ever thought would come up. The medical director can certainly help sales by answering some of the questions that are hard for the salesman but easy for him. The medical director who is doing a competent job will never allow a salesman's enthusiasm for a new product to be cooled by the tough questions posed by customers in the field. The company's entire promotional organization worked hard to give the salesman that momentum and he shouldn't be permitted to lose it on a technicality.

But all of a company's products are not new. Older ones also bring up new problems which require the medical director's help. But, in addition to helping out when asked, he can issue bulletins or letters to the sales staff, briefly reviewing rational and salient points of merit or advantage for the product. As a physician, the director speaks with a certain authority and influence which gives salesmen a feeling of confidence. Best of all, the medical director can sometimes call attention to a recent comment made by a medical author which reflects favorably on one of the company's older products. Perhaps, in 1953, clinical studies can be launched on some of these older products. If so, the product will look much better to the salesman and much better to the physicians he's detailing.

The medical director can also begin during 1953 to plan to aid sales promotion in the following year. No doubt the product development program conducted by the company has brought two or three new products almost to the state of final processing. The formula is agreed on, the type of packaging is about to be decided, clinical studies have shown the product is effective, well-tolerated and useful. In other words, the medical director and his clinical cooperators have evaluated it. They know the product is good and how to use it. The medical director, therefore, surely knows how to present it to interested physicians and how to instruct them in its use. So one of his contributions to the following year's sales is to aid his associates in devising impressive label copy and in writing an effective, helpful package circular or brochure.

A word about brochures. On several occasions visitors in my office have seen rather comprehensive brochures prepared for one of our specialty drug products. In a challenging manner they've asked, "Do you really believe that doctors read a piece of literature as long as that?" My answer must be "no," for I'm not as naive as that, and I doubt if two per cent of the personnel of medical departments or sales promotion departments believe it, either.

However, you don't have to read every book in a friend's library in order to find out that he has a library. You don't even have to look up every reference in a bibliography in order to find out that a product brochure has some relation to the literature of its subject. I am satisfied if the physician in question sees the comprehensive brochure. If he merely sees it, he has gained a new respect for the product. A brochure giving the background and most important facts about a product is part of the presentation every physician expects and its absence, if not conspicuous, might at least leave something undone which should be done.

In many cases it is necessary to determine whether or not a proposed product requires a new drug applica-

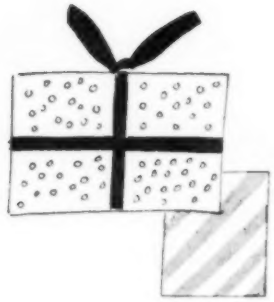
*(Continued on page 258)*

good
bottles
3

FOSTER
FORBES

GLASS COMPANY, MARION, IND.

SALES OFFICES: St. Louis · New York · Cincinnati
Detroit · Chicago · St. Paul · Cleveland · Milwaukee
Kansas City · Indianapolis · Memphis · Louisville
Atlanta · Colgate



# Packaging and Selling

### *Too Many Failures*

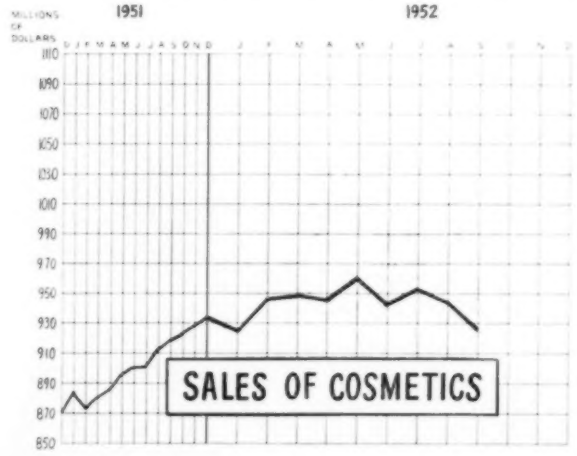
There is one field in business which badly needs some intelligent study and that is, how the medium size company can stay alive and pay the cost of distribution which it is facing today.

In this particular industry, the small business doing basically less than $100,000.00 seems to get along pretty well. This is because these businesses are usually operated almost as one-man enterprises and have the benefit of all the sacrifices, ambitions and expertability of the proprietor who goes into business with a new idea. When this business grows beyond $100,000.00 annually and reaches up toward $500,000.00 it enters a very critical period in its life. At this time, the business must build up an organization, must support a sales force, and must incur all sorts of operating and developing expenses which the volume of the business does not seem able to support. Both cosmetic and proprietary companies in this type of classification are finding it almost impossible to finance the right kind of a sales organization that would keep them in a competitive position with the larger companies they are fighting to join. In such things as advertising, they encounter an enormous waste of dollars because of their scattered or limited distribution.

On many occasions, non-competitive small companies of this type have sought to join together in one way or another so that they could share selling and traveling expenses on the basis of a combined gross sales of one or two million dollars a year. However, this method of selling never seemed to work out and it certainly has not been the solution for the critical problems of a manufacturing company during this intermediate stage in its growth.

Probably the basic reason why these problems arise is because almost universally the expansion of these companies have come about through a very thin development of national distribution rather than a development in depth in a marketing circle around their factory. This thin national distribution seems to be more easy to secure initially than a development spread out in circles, in depth, from the location of the factory. Nevertheless, since this thin national distribution has been such a primary cause of business failures for so many small companies, it would seem reasonable that many business men would take the more economical and the more financially sound road of vertical territorial development even though it seems to be a little more difficult path to travel in business growth.

Retail sales of cosmetics for the twelve months ended with September 1952 totaled $923,406,000. This compares with $944,774,000 for the twelve months ended with August 1952 and with $918,268,000 for the twelve months ended with September 1951.

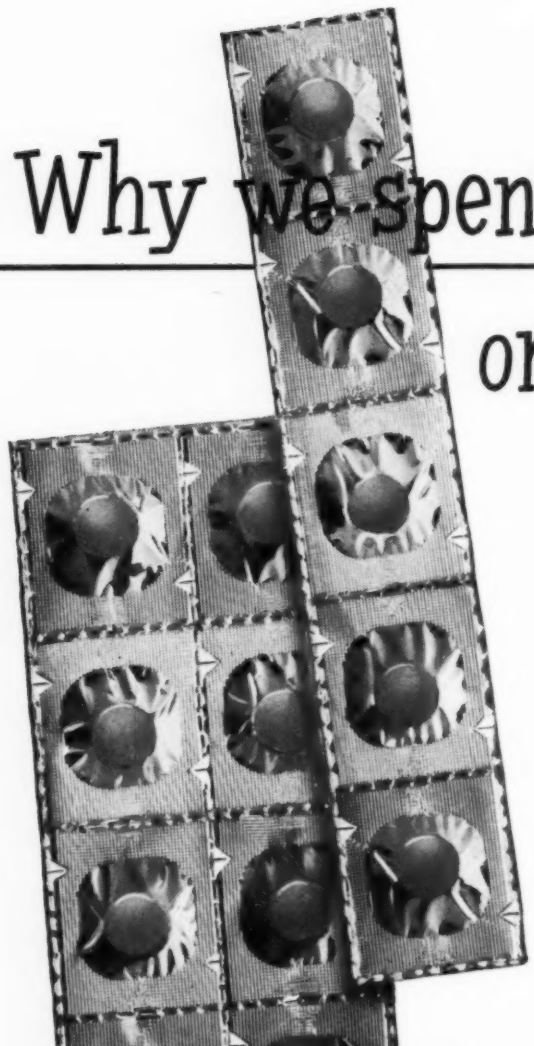



### *Waste*

"One of the greatest rat holes in the American economy" was the way a marketing expert recently defined the tremendous business losses arising from failure to do some pretesting. According to this man, up to 98 per cent of all new products are failures. These failures, if not eliminated, could at least be substantially reduced by proper pretesting of the product with the consumer, properly pretesting the market, the promotions and the advertising, and properly pretesting the package.

Pretesting can certainly be over done and in some cases develop into a phobia with the game becoming so fascinating that people spend all their money on it and forget the fact that the object is to get started and

# Why we spent $100,000 on your product



We did it in order to let you put your product in *the* perfect package. The old (IL) Unit Package was good—you know that. It protected your product, was attractive, inexpensive and easy to carry—but, one had to learn to open it.

Now the new (IL) Super-Sealtite brings you perfection in packaging. The new (IL) Super-Sealtite tears easily—it has to, for we actually remove 90% of the material along the line of separation between units. The result is *Feather-Light Tear—and a package that can be torn open even by a child. But we didn't stop there.

Easy opening means more than separating the units—it means easy access to the product itself. So, we have given you double tearing notches, located to tear across the grain of the material. We have given you a pocket that is smooth and ridge free. These important developments of (IL) Super-Sealtite provide your package with an ease and facility of handling, comparable to that of a fine lighter.

Now you have perfection in a wonderful package—(IL) Super-Sealtite—perfection that does not cost you one cent more. It was for this that we spent $100,000—and to give your product the convenience in use that means increased acceptance, increased sales. If you haven't seen the *Feather-Light Tear and tested it yourself, let us send you samples, then you'll know.

*REGISTERED

**CAUTION!**

**Good unit packaging must provide . . .**

- *Feather-Light Tear (not just a series of pin-point perforations).
- Double tear notches—on opposite sides of each pocket.
- Complete Protection—attained through selection and adaptation of the right packaging material for your product.
- Easy Adaptation of package to varying product sizes, dosage requirements and new package design.

**If you are not getting these features You Are Not Getting Your Money's Worth**

UNIT IVERS LEE CO. PACKAGING
215 CENTRAL AVENUE NEWARK, NEW JERSEY

**CREATORS OF SUPER-SEALTITE—THE PACKAGE THAT NEVER STOPS SELLING**

succeed in business. Nevertheless, the enormous number of inferior products which are later quickly rejected by the consumer, unsatisfactory packages or silly ineffectual merchandising plans, eat up millions of dollars each year without deserving this money to waste.

### *Defensive Self Service*

The evidence is accumulating, and in fact it seems to be growing trade opinion, that the grocery supermarket with its so-called revolutionary new form of selling, self-service, has just about reached the limits to which it can go in cosmetic and drug products. Self-service in the supermarket has had two or three years for experimenting, evolution, or whatever you want to call it, to determine just what part of the retail sales in drug and cosmetic products it would take over. In this experimental period, there have been a great many varied and different approaches to self-service, from the lavish over-glamorous stores that are found on the Coast and the Southwest all the way down the line with all kinds of variations, to the small, plain and practical independent store.

In a recent speech before the Merchandising Executives Club of New York, Herman C. Nolen, Vice-President in charge of drug merchandising for McKesson and Robbins, stated that food outlets are making progress "in the items which can be sold without service, such as dentifrices, shampoos and some staple sundries, but they are not making progress on cosmetics, pharmaceuticals and other items which require service."

Just recently, one of the largest cosmetic companies made a very detailed and extensive survey of self-service selling of cosmetics on the Pacific Coast. This region was selected because, to a very high extent, the stores here were pioneers in establishing cosmetic departments, because this section has provided more variations in an effort to seek a successful cosmetic formula and because some of the most lavish establishments in self-service selling of cosmetics have appeared in the grocery chains and drug chains of this area.

This very detailed survey confirmed exactly what Mr. Nolen stated. That is, except for that type of toilet article which should be termed a utility, such as tooth paste, shaving cream, shampoo, etc., the self-service selling of most cosmetics has been a complete flop in spite of some very intelligent efforts and tests to make it succeed. Practically, without exception, the grocery stores which have a self-service department either do not stock such things as lipstick, face creams, face powder, fragrances, or they have let their stock and selection decline to a point where it can be reasonably said these products are not represented in the department. For instance, in one leading store which has acquired a reputation for having the most successful and lavish self-service department for cosmetics, not one single brand of face powder was carried by this department and the so-called hostess who was in charge of this department, offered a dusting powder when an inquiry was made for face powder.

At a recent meeting of the National Retail Dry Goods Association, this subject of self-service and self-selection by the customer occupied a large part of the debate. Reading these speeches and debates, it seems perfectly clear that the majority opinion in the department store is that personal selling will remain the basic and primary way of moving their goods over the counter and that self-service should be experimentally tried in a limited number of departments and a limited number of goods.

All of this leads us to conclude that we have probably reached the peak of the great outcry which has taken place in the business press and in convention speeches regarding the retail revolution in this Country. Self-service selling, which is the keystone of this entire revolution, may very well find itself on the defense rather than the offense during the coming years. It is very probable that as competition in selling reaches a point of very keen activity, that self-service or self-selection in selling for certain types of products would begin to fall down in the face of intelligent personal selling.

It can hardly be argued that under certain conditions which may more and more prevail in the coming months, that self-service selling will really be recognized as "take it or leave it" selling.

### *Big Mother's Day*

Two interesting features can be gathered from the very comprehensive bulletin just issued by the NATIONAL MOTHER'S DAY COMMITTEE of 393 Seventh Avenue, New York 1, New York.

The first is that Mother is expected to give the retail trade $250,000,000 for this one day and the second, according to this bulletin, is that practically everything that can be pushed over the retail counter is joining in to get some of this money.

Anyone whose product lends itself to a Mother's Day promotion will unquestionably find himself up against as heavy competition from as many different industries as Christmas ever produced.

### *Homing Pigeon Brings No Bacon*

Department store buyers, in the cosmetic department, very soon acquire the feeling that as far as store promotions go that they have seen everything. It is certainly true that hardly anything that has ever been tried as a method for selling to a retail store has had its application in the cosmetic field, and a great many of the novel, the strange and the weird in sales promotions have originated in the mind of some perfume or cosmetic salesman.

Last Fall there was a promotion that really jolted a great many of the department store executives who thought they had seen everything. Each of these stores, one day, received a crated pigeon addressed to the Toilet Goods buyer. When this pigeon was examined, it was found that the outline of a promotion, including an order blank, was attached to the pigeon with instructions for the buyer to fill out the order blank, place it in the capsule attached to the homing pigeon's leg and then release the pigeon. According

*Duraglas stock-mold bottle No. A-4445 can help you gain brand recognition at the point of sale*

# MAKE-UP makes the difference...

**gives your package individuality . . . your complete line a family look!**

There's a world of difference at the point of sale when your product or your complete line has a distinctive package with sales appeal. Your products present a united sales impact . . . benefit from impulse sales as well as your brand recognition.

Owens-Illinois has more than 1400 different sizes and styles of stock-mold Duraglas containers from which you can choose the ones that are exactly right for your products. Then, skilled packaging specialists at the Duraglas Center will help you add glamour and sales appeal with an effective label and closure combination.

Even in these unusual times there is wide latitude to the individuality you can give your product. And, remember, no matter what market conditions may be, it doesn't pay to let your package get out of the habit of selling.

These Duraglas rounds offer a family range of ½-oz., 1-oz., 2-oz., 4-oz., 6-oz., 8-oz., and 16-oz. sizes.

**Duraglas** TRADE MARK REG. U.S. PAT. OFF. packages are protectors of quality

**OWENS-ILLINOIS GLASS COMPANY • TOLEDO 1, OHIO • BRANCHES IN PRINCIPAL CITIES**

to trade reports, this promotion never really got under way. But as one store executive remarked, "We thought we had seen everything in our store, but a pigeon is definitely new." Another buyer said "We released the pigeon without the order blank; maybe a lot of pigeons got lost on the way home, or maybe a lot of buyers had pigeon for dinner. At any rate we heard nothing further about it."

### *Restless Appearance*

Grooming illiteracy, according to Davis Factor, chairman of the board of Max Factor & Co. and President of the Toilet Goods Association, has practically reached the vanishing point in the United States.

The President of the Toilet Goods Association believes that "color restlessness" and "fragrance restlessness" are going to make new demands on the industry for creative changes and that these in turn will bring a record year in 1953 for the cosmetic industry.

### *Not Even Half Way*

Now that we are able to assess the year 1952 insofar as the sales of cosmetics, fragrances and toiletries go it seems to be a universal opinion that during this year sales expanded and that as a result the industry during this year took in more dollars than it has ever done before, and it sold to more different customers.

Since this year will certainly bring the industry manufacturing cosmetics, fragrances and toiletries as a newcomer into the ranks of the billion-dollar industries it is interesting to separate and appraise the future potentials of the industry and the direction in which it can advance.

During the last several years of extremely rapid growth, a number of people in the industry, including some important executives, have taken a stand which, while not clearly defined, nevertheless seemed to indicate the opinion that the industry is very near its saturation point. In other words, they feel that just about all of the women in this country, who because of income, culture or environment can or should be using a cosmetic, are already customers of the industry. The attitude of these folks seem to be that any future expansion by their company must come from business they have taken away from competitors.

Fortunately for the industry, this opinion is not widespread and it is certainly true that there is a great deal of solid optimism for the future growth of this industry. In spite of this solid optimism, it is probably true that very few men in this industry realize the size of the opportunities for industry and individual company expansion.

Probably no cosmetic lends itself so well to an industry analysis, marketwise, as does the lipstick. The reason for selecting the lipstick as our number one example is that it is the most widely, as well as the most frequently used cosmetic. Certainly, if anywhere in the industry there was any justification for saying, here is a cosmetic product which is just about the point of market saturation, it would be the lipstick.

Nearly every survey that is made by publication, market research organization, cosmetic manufacturer, or any other source, shows that a good 85 per cent of American women from about fourteen years of age up to and after seventy, in every kind of environment, from city to southern mountains, are using at some time a lipstick. So far as the one single factor of widespread usage goes, there are very few products of American industry including tooth paste or breakfast foods that have such widespread and universal usage. So far as just this one single factor of widespread usage goes, it must be admitted that the lipstick is fairly near the point of market saturation.

However, in many of these surveys, there are indications which make it quite clear that a very large part of these lipstick-using American women are only very occasional users. This is true among housewives, among rural people and among many other sections where the lipstick may be used only once or twice a week, or once or twice a month. There can be no question that a vast field of education still remains for the industry to increase this frequency of use and in this one factor lies a potential for market expansion which could easily run between 25 per cent and 30 per cent increase.

Nor has the lipstick market exhausted all its opportunities in making use of obsolescence. It is probable that only among a minority of the women using lipsticks, and among a minority of the brands, that such factors as style, fashion, color have developed to a point where the stick, while only partly used, is rejected in favor of a new purchase because the new purchase offers a tangible value sufficient to make a customer discard the partly used lipstick.

If this factor of fully developed obsolescence is linked to the factor of increased use, it is not beyond the bounds of intelligent reasoning to us that the lipstick market potential in this country has possibilities of an expansion as great as 50 per cent.

If this market situation is true for the lipstick, then it is very much more true that every other kind and type of cosmetic is very far from its market potential.

There has been a great deal of discussion going around regarding fragrance products, whether the consumption of these products has been increasing.

The fragrance industry, which includes primarily perfume, toilet water, cologne and sachets, did a retail business in 1952 of about 125 million dollars. This large retail business was a slight increase over the previous year and in fact the sale of fragrance in some form has been growing with each year, during the last ten years, in the number of dollars taken in, the number of unit packages sold and in the number of consumers using a fragrance.

At the present time, it can be stated, with some assurance of truth, based on a careful analysis, that not over 20 million American women are today using a fragrance of any kind or any form. Of these 20 million, it is certainly also true that at least 10 million are very occasional users.

If we compared this current market of 20 million women for a fragrance product with the market for lipstick, which certainly exceeds 50 million women, and apply to fragrance products the same market factors

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THEY WILL SERVE YOU WELL!

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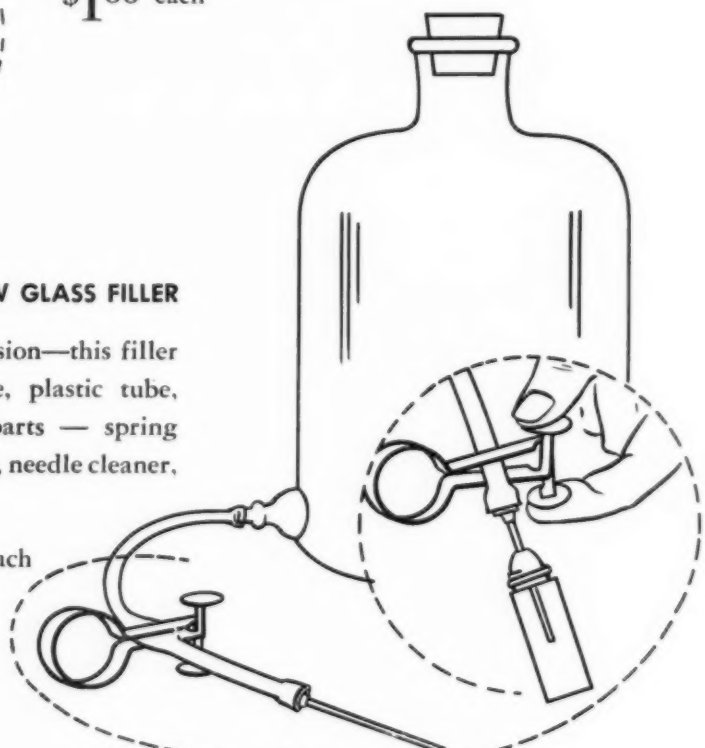

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that we did to lipstick, then we must certainly arrive at a conservative market potential in the sale of fragrance products of more than 250 million dollars. Much more than lipstick, perfume sales suffer from infrequency of use among the women who comprise its present users, and equally with the lipstick the opportunities for obsolescence in expanding the sale for fragrance products is very wide and varied.

So let us conclude that a billion-dollar cosmetic industry need not be more than half the way we still have to travel.

### *Must Taste Good*

Ely Little & Company are so certain that it is important for medicine to have an appealing flavor, particularly in the case of children, that they have organized a "junior jury" for taste approval. So far results have shown that children have definite taste preference, that they are not afraid to say so and that juvenile taste buds do not always agree with adult taste preferences. Since pediatric preparations are made especially for youngsters, Ely Lilly & Company have organized this

"junior jury" so that children can choose their own flavor. All samples to be tested are displayed in opaque red flasks so that the youngsters won't be influenced by a favorite color. Each junior expert rinses his mouth with water before sampling and after he has indicated his choice, his reward is a balloon or bubble gum.

### *Wildroot to Sell Mentholatum*

The Wildroot Co. has been appointed exclusive sales agent for the products of the Mentholatum Co. This has come about as a result of successful tests conducted over the past three years. To test the soundness of such a plan, the two companies agreed in 1949 that Wildroot would act as sales agent for Mentholatum products in the southwest part of this country to ascertain whether or not this method of distribution would work out on a national scale. These tests and others run in areas added later clearly indicated the advantages resulting from distribution through the larger sales force of Wildroot and brought about an agreement whereby Wildroot would become national distributor for Mentholatum products.

Mentholatum is said to distribute about 50 million units of its products annually. The company has been doing business for several years virtually without a field sales force, it is explained. Wildroot has approximately 70 salesmen and distributes mainly through wholesalers.

### *Schwegmann Appeals*

As was to be anticipated, Schwegmann Brothers Giant Super Market, New Orleans, is appealing to the U. S. Circuit Court the District Court decision in favor of Eli Lilly and Company. It is a certainty that this case will not be settled until it has been appealed by one side or the other all the way to the U. S. Supreme Court. This is as it should be. Certainly there is no sense in having any uncertainty exist with regard to the validity of the fair trade acts as now operating under the McGuire Act.

### *Portable Hand Lotion*

An interesting innovation in the packaging of hand lotion is presented by W. O. Washburn and Sons, Inc., 500 Robert Street, St. Paul 1, Minn.

Individual applications of the lotion are encased in hermetically sealed silver foil pillows, making it possible to have hand lotion with you at all times.

The "pillows" are in a match-flip container, in the colors of white and rose, each folder containing eight pillows with just enough Balm Argenta in a pillow for a single use.

They are packed in a dollar size, consisting of 12 folders of 8 pillows each, or 96 individual applications and also in a counter display carton containing three of the purse size packs, or 24 pillows, for 25 cents, plus tax.

For use at home, Balm Argenta comes in two sizes, 4 ounces at 50 cents and 10 ounces at $1, plus tax.

# This cap is extra strong

## . . . for extra production on high-speed machines

● If the speed of your lines is limited by cap breakage, you can boost your output with Armstrong's Hi-Tork* Caps. These caps are specially built to take the torque and impact of modern high-speed lines.

Hi-Tork Caps are heavier, too (weigh them and see). And they're designed so that the skirt, thread, and dome all take their exactly proportionate share of the capping machine's impact. This exclusive feature is the key to their amazing ability to take punishment without breaking.

*T.-M. applied for.

Their recessed design has no projections to chip or cause breakage. And their thread contours have been re-designed to increase the contact area and give you a better seal with less strain on the cap.

These features all add up to faster capping—with less breakage, fewer rejects, and less downtime.

We'll be glad to help you test "Hi-Tork" Caps on your own lines. For further information, just call your near-by Armstrong office or write Armstrong Cork Company, Glass and Closure Div., 1902 Prince St., Lancaster, Pa.

## ARMSTRONG'S "*HI-TORK*" MOLDED CAPS

**Molded for extra production on high-speed machines**

# Doings

**Sharp & Dohme** has released Tyotocin, a new antibacterial and antimycotic treatment of ear infections. It is recommended in the treatment of mycotic and bacterial infections of the external auditory canal, such as otitis externa, furunculosis and secondarily infected eczema. It is also indicated for relief from pain and congestion in acute otitis media when the ear drum is intact.

**Max Factor** has introduced a completely new blend of creamy make-up base and powder, Creme Puff, applied with a puff from a hinged, mirrored compact. It retails for $1.25 plus tax, and comes in five true skin tones: Truly Fair (Fair), Tempting Touch (Natural), Candle Glow (Medium), Gay Whisper (Dark Natural) and Sun Frolic (Tan).

**Abbott** has prepared Desoxets, which consists of Desoxyn plus multiple vitamins in a single compressed tablet. One tablet should be taken immediately upon arising and another about an hour before lunch. This will cause a lessening of the appetite and an accompanying elevation of mood and mental activity.

**A. H. Robins Co.** is providing Mephate in capsule form as a means of heightening the clinical usefulness of orally administrated mephenesin by the inclusion of glutamic hydrochloride to improve absorption and enhance effectiveness. It is indicated in such clinical conditions as anxiety tension and psychotic states; acute and chronic alcoholism; rheumatoid arthritis and other rheumatic conditions; and certain neurological and spastic disorders.

**George A. Breon & Co.** is offering a purified form of corticotropin (ACTH) to doctors, hospitals and the drug trade. It suplements the firm's previously introduced ACTH preparation, Acorto Gel.

**Lederle Laboratories** has added Gevral Protein to its line of geriatric products, designed for older persons in need of vitamin supplements. This preparation contains balanced proportions of necessary vitamins, minerals and proteins which are carried in a pleasant-tasting white powder, designed to be mixed with milk used on cereal or desserts.

**Revlon Products Corp.** is sponsoring "Jane Froman's U.S.A. Canteen," musical comedy series starring Miss Froman and GI guest on the CBS television network Tuesday nights which began early this month. This marks Revlon's entrance as a regular-time buyer on television feature programs.

**Schering** has prepared Coricidin with Codeine Phosphate for relief of distressing symptoms of the common cold, such as myalgia, sinusitis and coughs due to colds. The sedative and analgesic actions of codeine phosphate added to the potent antihistamine, Chlor-Trimeton, which is combined with the analgesics and antipyretics, help to diminish coughs and decrease pain.

**Upjohn** has developed neosone, an ointment containing cortisone and neomycin, for use in the treatment of a wide range of eye infections and injuries.

**Maltbie Laboratories** has announced the preparation of Lipocholan, a new product for combined hydrocholeretic and lipotropic therapy. It promotes a more pronounced volume of fluid bile and supports functional activity of the liver by prevention or reversal of fatty infiltration within the liver cells.

Maltbie has also announced a new formula for Lusyn, a product indicated in corrective therapy for overstimulation of the parasympathetic and central nervous systems. Each tablet now contains 5 mg. instead of 2.5 mg. of homatropine methylbromide for more effective dosage, in line with the clinically demonstrated wider safety range of this parasympatholytic agent.

**Winthrop-Stearns** is offering Pontocaine Cream, supplementing other forms of Pontocaine already available. The cream is useful in burns, scalds, ulcers, operative wounds, hemorrhoids, sunburn, ivy and other plant poisoning, insect bites, urticaria, eczema and other itching skin diseases. Also introduced, is Mebaroin, a new drug preparation combining in tablet form two recognized anticonvulsant compounds in order to control epileptic seizures more effectively.

**Roussel Corp.** has prepared a new microcrystalline form of Estrone, U.S.P. which is particularly suitable for aqueous estrone suspensions. It affords considerable saving in processing time, reduces the usual loss factor to a minimum, and permits the resultant suspension to be sterilized at higher-than-usual temperatures. Detailed information and prices may be obtained by writing the company at 155 East 44th St., New York.

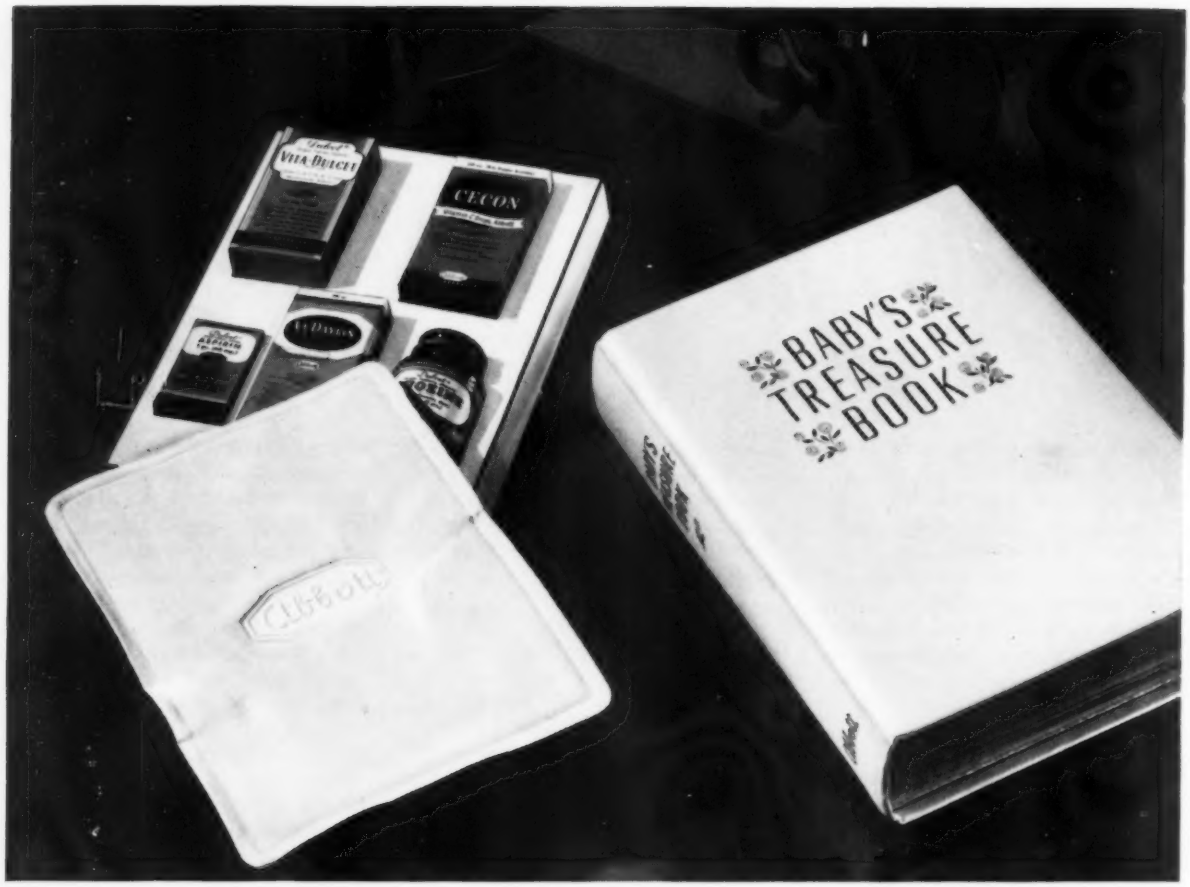


*Photo courtesy of Abbott Laboratories*

# *Custom Protection*

## —the safe, smart way to package pharmaceuticals

How frequently a carefully manufactured product is destroyed or damaged on its way to market due to inadequate packaging protection! Yet there's no excuse for costly shipping damage, as KIMPAK* has proved time and again. In the "Baby's Treasure Book" for example, Abbott Laboratories use interior pads of KIMPAK, top and bottom, to provide a decorative-protective cushioning that absorbs shock, prevents movement and eliminates rubbing of label. KIMPAK will absorb 16 times its own weight in moisture within 30 seconds to comply with parcel post regulations—and gives you more protection than most materials of greater weight and density. Clean, soft and flexible, KIMPAK is ideally suited for packaging all types of pharmaceuticals—tablets, capsules, liquids in bottles, jars, tubes, vials and ampoules. For complete information, write Dept J-23, Kimberly-Clark Corporation, Neenah, Wis.

KIMPAK INTERIOR PACKAGING

A Product of **Kimberly-Clark**

*T.M. REG. U.S. & FOREIGN COUNTRIES

# Doin's ... (CONTINUED)

**Dorothy Gray** has created a fragrance series, "Wedgwood," inspired by the perfection and enduring beauty of blue Wedgwood ware. This series is to be introduced throughout the country this Spring and includes perfume, cologne and dusting powder.

**Nepera Chemical Co.** has developed a new drug that aids in a 5-way attack on both allergic and infectious conditions of the nose, including sinusitis. The new agent is part of a new nasal therapy preparation known as Biomydrin and is now available on prescription.

**Lancome** is introducing three new scents, each of which interprets an individual season. They are Graces du Printemps (Graces of Spring), Joyeux Ete (Joyous Summer), and Bel Automne (Beautiful Autumn).

**Dermetics** is preparing for Spring by introducing a Pressed Powder Palette known as Place and Show. The new compact combines the qualities of Dermetics Fluid Color and the moisture-resisting Face Powder with the no-spill convenience of this new type of make-up. It will be on sale March 10.

**Parke, Davis & Co.** has announced a new therapeutic vitamin formula, Theridol Kapseals, containing in exceedingly high potency all vitamins for which human requirements have been established. Each Kapseal represents 25,000 units of Vitamin A, 1,000 units of Vitamin D, 10 mg. of Vitamin $B_1$, 5 mg. of Vitamin $B_2$, 150 mg. of Nicotinamide, 150 mg. of Vitamin C, and 2 mcg. of Vitamin $B_{12}$

**Schieffelin & Co.** has begun national distribution of Danilone, a phenindione anticoagulant, as a result of the Food and Drug Administration's approval. Canadian physicians have been using the product successfully for two years, but in the United States until now it has been restricted to clinical investigation work.

**Shulton's** 1953 advertising will be heavy during the entire year for Old Spice men's products, and during the first six months will consist of concentrated campaigns for Desert Flower and Friendship's Garden toiletries.

**Breon** has introduced Estrogenic Substances, a suspension of purified natural estrogens in an isotonic solution of sodium chloride. The product, which is injected intramuscularly, is primarily indicated in the treatment of menopause, either natural or induced.

**Pfizer** is now marketing Steraject cartridges containing 600,000 units of crystalline procaine penicillin G aqueous suspension. Like the other antibiotic cartridges, this new size is also supplied in individual cartons containing a sterile, foil-wrapped needle, packed 25 cartirdges in a shelf carton.

**Schenley** has introduced Syncrobin Suppositories, a combination of two proven antibiotics, penicillin and dihydrostreptomycin, for the effective treatment of a wide range of pathogenic disorders of the vaginal tract. The new product is intended for preoperative and postoperative use in major gynecologic surgery, and as a prophylactic measure following minor surgical procedure such as coagulation, conization and cauterization.

**Nestle-LeMur Co.** is offering a special deal on their Nestle Baby Hair Treatment through March 31 to enable retailers to take full advantage of National Baby Week from April 26 through May 2. Deal No. 1405 offers one package of the product with the purchase of every 11.

**Merck** is now offering a new form of Hydrocortone, brand of hydrocortisone, for the local treatment of allergic skin disorders. The new product is Topical Ointment of Hydrocortone Acetate.

**Reed & Carnrick** has introduced Mabutone, a triple-action sedative, relaxant and antidepressant. It is indicated for use in a wide variety of psychotic, neurotic and psychoneurotic conditions to provide symptomatic relief from anxiety, inward tension, nervousness, mental depression and other emotional disturbances commonly observed in these conditions.

**The E. L. Patch Co.** has developed Elpagen for use in the symptomatic treatment of rheumatic fever, rheumatoid arthritis, neuralgia, gout, fibrositis, headache, muscular pains and in other conditions where high salicylate levels are desirable. It is supplied in bottles of 100 and 500 tablets.

**A. H. Robins** has announced the preparation of Donnalate, a new product in tablet form, for use in the medical management of peptic ulcer.

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*Produced at our Brooklyn Factory*

## OILS

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| CLOVE | BALSAM PERU | OPOPONAX |
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# News...

### Briggs Promoted by Pfizer

Robert H. Briggs has been appointed manager of the chemical sales division of Chas. Pfizer & Co., according to John E. McKeen, president and chairman of the board. He had formerly been assistant manager of that division. In his new capacity, Mr. Briggs will supervise bulk sales of Pfizer antibiotics, vitamins, citric acid and other chemical products.

Marshall N. de Noyelles, who has been national field sales manager of the chemical sales division, will succeed Mr. Briggs in his former post.

ROBERT H. BRIGGS

### Blish Receives Award

Dr. M. J. Blish, supervisor of organic and biochemical research for International Minerals & Chemical Corp., has received the University of Minnesota's outstanding achievement award, reserved for former students who have attained high eminence and distinction.

His research work in the fields of cereal technology, proteins, enzymes of wheat and flour, and the commercial production of amino acids, especially glutamic acid, have won him wide recognition.

### Chic. Perfumery Ass'n Elections

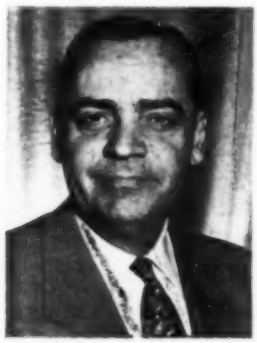
J. C. Browning was elected president of the Chicago Perfumery, Soap and Extract Association for 1953 at a recent business meeting. At the same time, W. D. Ackley was elected vice-president; E. F. La Sarre, treasurer; and Arthur H. Culver, secretary. They were officially installed at the monthly luncheon at the Conrad Hilton Hotel on January 13.

### Dick with Vick Prods. Division

Lester C. Dick, vice-president of G. S. Stoddard & Co. for the past 12 years, has joined the Vick Products division of Vick Chemical Co. as assistant director of that division's pharmaceutical research laboratory, according to Dr. T. C. Grubb, director of the Laboratory.

### Walker, V.P. of van Ameringen

Charles P. Walker, Jr. formerly general sales manager of Chas. Pfizer & Co., has been named vice-president of van Ameringen-Haebler, Inc., according to A. L. van Ameringen, president. He also served on the Pfizer board of directors as well as on the boards of its foreign subsidiary corporations. Mr. Walker will continue his present tenure as a director of Pfizer.



CHARLES P. WALKER, JR.

### Visit Fritzsche Plant in Toronto

F. H. Leonhardt, president of Fritzsche Brothers, Inc., accompanied by his son and by Joseph A. Huisking, vice-presidents, flew to Toronto last month to inspect the new building at 81 Northline Road which will provide administration laboratory and plant facilities for the company's Canadian affiliate, Fritzsche Brothers of Canada, Limited. The modern one-story building, just completed, has been designed to accommodate all of the operations of the Canadian subsidiary with ample facilities for future expansion.

### Briggs Appointed by Dow

Ernest Briggs, Jr., formerly head of aromatic sales for the Dow Chemical Co., has been appointed to a position in a new section of organic chemicals sales, organized to merchandise and promote a packaged permanent type antifreeze under customers' private-brand labels.

### Clissold Named Sales Manager

John W. Clissold, formerly sales director for the Anahist Corp., has become sales manager of the drug division of Boyle-Midway Inc., according to Warren Tingdale, vice-president in charge of sales and advertising.

### Reis Heads Essential Oil Ass'n

Waldo F. Reis, vice-president, van Ameringen-Haebler, was elected president of the Essential Oil Association of U.S.A. during the annual meeting last month. Other officers also elected include: Louis Gampert, Felton Chemical Co., vice-president; and P. J. Coutin, Roure-DuPont, Inc., re-elected as secretary - treasurer. Directors are George H. McGlynn, Magnus, Mabee & Reynard; and Robert Engel, Trubeck Laboratories.

WALDO F. REIS

### Fischer Honored by Magnus

W. F. Fischer, sales manager of Magnus, Mabee & Reynard, was honored on the occasion of his 45th year with the company last month during the closing dinner of the MM&R annual sales conference at Toots Shor. The celebration was attended by about 80 members of the company staff and sales force. Also honored were the 18 members of the Twenty Year Club.

### Wyeth Honors Miss Eater

Wyeth Laboratories paid tribute to Barbara Eater, inspection supervisor early last month in honor of her fiftieth year with the company. Harry S. Howard, president, presented Miss Eater, 70, with a gold wrist watch, and Dr. Scott Fritz, managing director of the Marietta Laboratories, gave her a scroll of commendation and appreciation in behalf of her colleagues. During the anniversary party that followed, fellow employees from medical research personnel to the stable boy, extended their congratulations.

NORMAN A. GRIMM

### Chicago Drug & Chem. Elections

Norman A. Grimm, general manager of the midwestern region of Chas. Pfizer & Co., Inc., has been elected president of the Chicago Drug & Chemical Association for the ensuing year.

Additional officers and directors elected are: George H. Stanton, U. S. Industrial Chemicals Co., as vice-president; Glenn H. Reinier, Abbott Laboratories, secretary; and Thomas F. Glynn, the Alphaden Co., treasurer.

Directors for a two-year period are: George R. Beach, Jr., E. I. du Pont de Nemours & Co., Inc.; C. W. Allen, Givaudan-Delawanna, Inc.; Forrest M. Luckett, Monsanto Chemical Co.; Kenneth W. Hartley, Dodge & Olcott, Inc.; and Robert DeLamar, DeLamar-Hendrey Chemical Co., Inc.

### Heyden-Monsanto Methanol Plant

Heyden Chemical Corp. and Monsanto Chemical Co. have entered an agreement to build a methanol plant adjoining Monsanto's new acetylene facilities in Texas City, Texas, according to Simon Askin, Heyden president, and Joseph R. Mares, general manager of Monsanto's Texas operations.

The methanol plant will use by-product gas from acetylene operation. Both companies will share equally in the cost of construction and in the output of the plant which will have an approximate annual capacity of 25 million gallons. The joint enterprise will continue for a period of years and provides for optional termination thereafter.

### Reiner Appointed by Dorothy Gray

J. J. Reiner, Jr. has been appointed sales representative for Dorothy Gray, Ltd. in upper New York State, according to J. M. Boohecker, general sales manager. He had previously represented the company in the New York metropolitan area.

LEON GEFEN

### Gefen Attends Felton Conference

Leon Gefen recently represented Felton Company, France, at the annual meetings held at the Felton Chemical Co. headquarters in Brooklyn. A long-time resident of Grasse, Mr. Gefen directs the activities of the European Felton organization and also acts as general purchasing agent of continental essential oils and natural aromatic products for the Brooklyn firm, as well as its other manufacturing branches in Los Angeles and Montreal.

### Post Named Nopco, V.P.

Dr. C. I. Post has been elected avice-president of Nopco Chemical Co., according to Thomas A. Printon, president. He will be responsible for research, sales and advertising of the company's line of vitamin products for the dairy, farm feed and pharmaceutical industries.

### Merritt Joins Baker & Bro.

William E. Merritt has joined the staff of H. J. Baker & Bro. He had previously been associated with the Ashcraft-Wilkinson Co., and prior to that, with the Chilean Nitrate Sales Corp.

### Pfizer Appointments

Courtland Barwick, formerly southern regional manager for the antibiotic division of Chas. Pfizer & Co., has been appointed administrative assistant to Thomas G. Bradley, assistant general manager of Pfizer's antibiotic division.

Hugh Stewart, formerly district manager at Houston, will move up to the post of southern regional manager, and L. Allen Keller will assume the Houston district managership.

Albert P. Molinaro, who has been active in supervising the Pfizer student program, has become assistant manager of Pfizer's hospital sales department. Sam G. Brock, special hospital representative from Jacksonville, Florida, has been appointed manager of the district comprising Virginia, North Carolina and South Carolina, with headquarters in Charlotte, N. C. He replaces Carter H. Richardson who was recently appointed clinical research coordinator for the southern region. Additional clinical research coordinators also appointed are John J. McCormack, central region; James C. Steward, western region; and Walter Fuhrman, eastern region.

Posts as special hospital representatives have been given to Solon Collins, Jacksonville; Carl Wille, Long Island; Robert E. Van Petten, Chicago; and Daniel J. Maloney, Buffalo.

### Fallek, Dehydag Representative

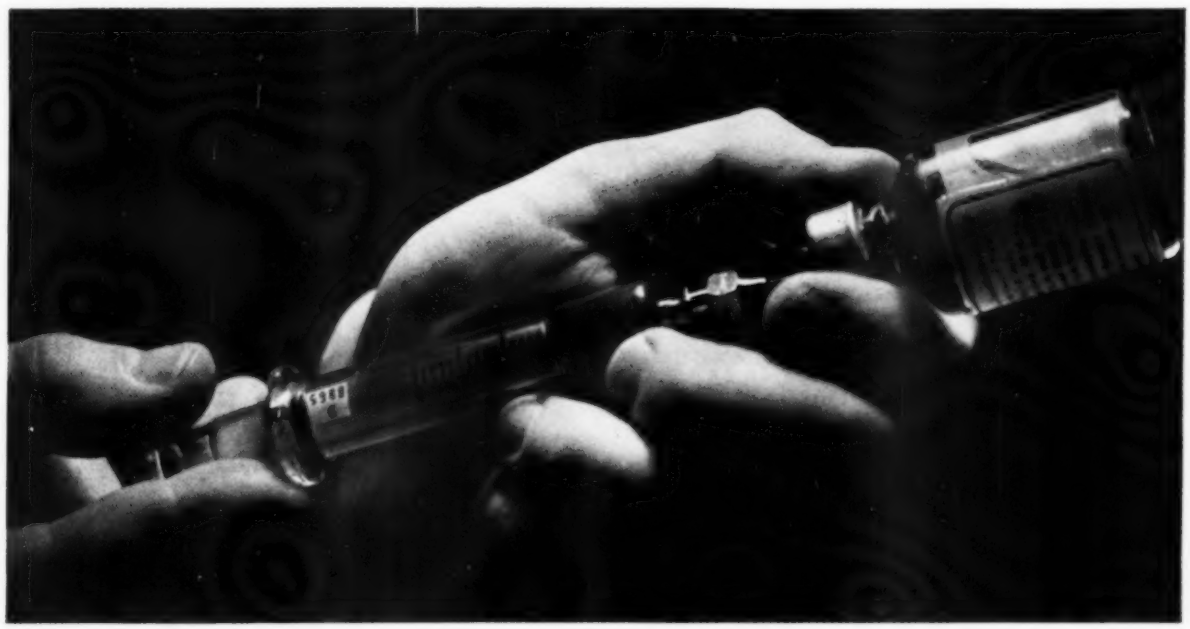
Fallek Products Co. has been appointed American representative of Dehydag Deutsche Hydrierwerke A. G., Duesseldorf, Western Germany, for their cream bases and emulsifiers based on fatty alcohols. Originally in the Eastern part of Germany, Dehydag was later moved to its present location as subsidiary of Kenkel & Co.

Officers of the Chicago Perfumery, Soap and Extract Association who were installed on January 13. Left to right: W. E. Ackley, van Ameringen-Haebler, Inc., vice-president; J. C. Browning, Demert & Dougherty, Inc., president; E. F. La Sarre, St. Clair Specialty Manufacturing Co., treasurer; and Arthur H. Culver, Packing Materials Corp., secretary.

DOW

# SAFE SOLVENT FOR PHARMACEUTICALS

## Solids put into solution with DOW PROPYLENE GLYCOL, U.S.P. will make your formulations for injection more effective and readily acceptable



Propylene glycol, U.S.P. by Dow is used in many approved and accepted pharmaceutical preparations for injection, internal consumption and for topical application, too. Answering the special needs of the industry, this solvent is a good carrier. It forms a preparation that is an acceptable medicinal, and above all it is *safe*.

The useful properties of propylene glycol as an emollient, humectant, lubricant and preservative can also be valuable in your formulations. The versatility of its solvent properties extends to many organic chemicals, making it well worth your consideration for use in estrogens, antiseptics, salves, elixirs and ointments. For further information about propylene glycol, U.S.P. write to THE DOW CHEMICAL COMPANY, Midland, Michigan, *Dept. OC 3-30.*

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Durlin is first in quality, first in fashion-right colors,

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*glamorous hands* *around the world...*

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## Zeller, Robins Gen. Sales Manager

E. W. Zeller has been appointed general sales manager of the A. H. Robins Co., Inc., succeeding the late E. F. Heffner, Jr., according to E. Claiborne Robins, president. He joined the company as southern division manager in 1945 and became assistant sales manager in 1951.

E. W. ZELLER

## Stokes Opens New Laboratory

F. J. Stokes Machine Co. has opened a new $150,000 laboratory providing complete facilities for testing and developing materials, equipment and processes for customers. A representative selection of Stokes extrusion, molding, performing and compacting presses used in the plastics, ceramics and powder metallurgy industries has been installed. Many new dies and accessories, improved methods, and experimental powdered metal mixtures and plastics compounds will undergo trial runs in this section of the laboratory.

This work is carried on by Dr. Earl W. Flosdorf, director of research and development, and his two assistants, Joseph F. Piotrowski and William H. Hamilton.

## Merck Opens New Cafeteria

More than 3000 employees of the Rahway plant of Merck & Co. enjoyed a special free dinner December 29 to celebrate the opening of the plant's new 1000-seat cafeteria. Dr. Edward J. Nolan, plant manager, introduces James J. Kerrigan, president, who delivered an informal dedicatory address and cut the ribbon marking the official opening of the doors.

The cafeteria, which has been two years in the planning and construction, provides 300 more seats than the combined capacity of the company's two former units. This cafeteria is under the supervision of Dr. Nolan, with general guidance from E. J. Lyons, vice-president for personnel. Fred W. Bauer is manager.

## Carpenter Named Shulton V.P.

Frank N. Carpenter has been appointed vice-president in charge of sales by Shulton, Inc., according to George L. Schultz, president. He had formerly been assistant to the founder and past president of the company, William L. Schultz, and, for a number of years, general sales manager.

FRANK N. CARPENTER

## Cole with Lueders 25 Years

Marvin Cole, assistant perfumer, celebrated his 25th anniversary with George Lueders & Co. last month, becoming the 53rd member of the Veterans Organization. He was guest of honor at a celebration in the office during which he was presented a service pin, a wrist watch from the company and gifts from the employees. He was later tendered a luncheon at the Drug and Chemical Club.

Twenty-four members of the Twenty-Five Year Club were present at the luncheon including Edward V. Killeen, F. Wever, Harry W. Heister and August Miller.

## Cola Returns from Trip

Maurice Cola, chemist and technical consultant for Fleramatic, Inc., has returned to New York after a nine-month trip through Latin America during which he made an extensive tour of each country and visited their many clients.

He will return to France in a few months and will work there with Roure-Betrand Fils and Justin Dupont of Grasse in the study of new developments and techniques for the manufacture of essential perfume oils and cosmetic formulae.

## Groggins with Food Machinery

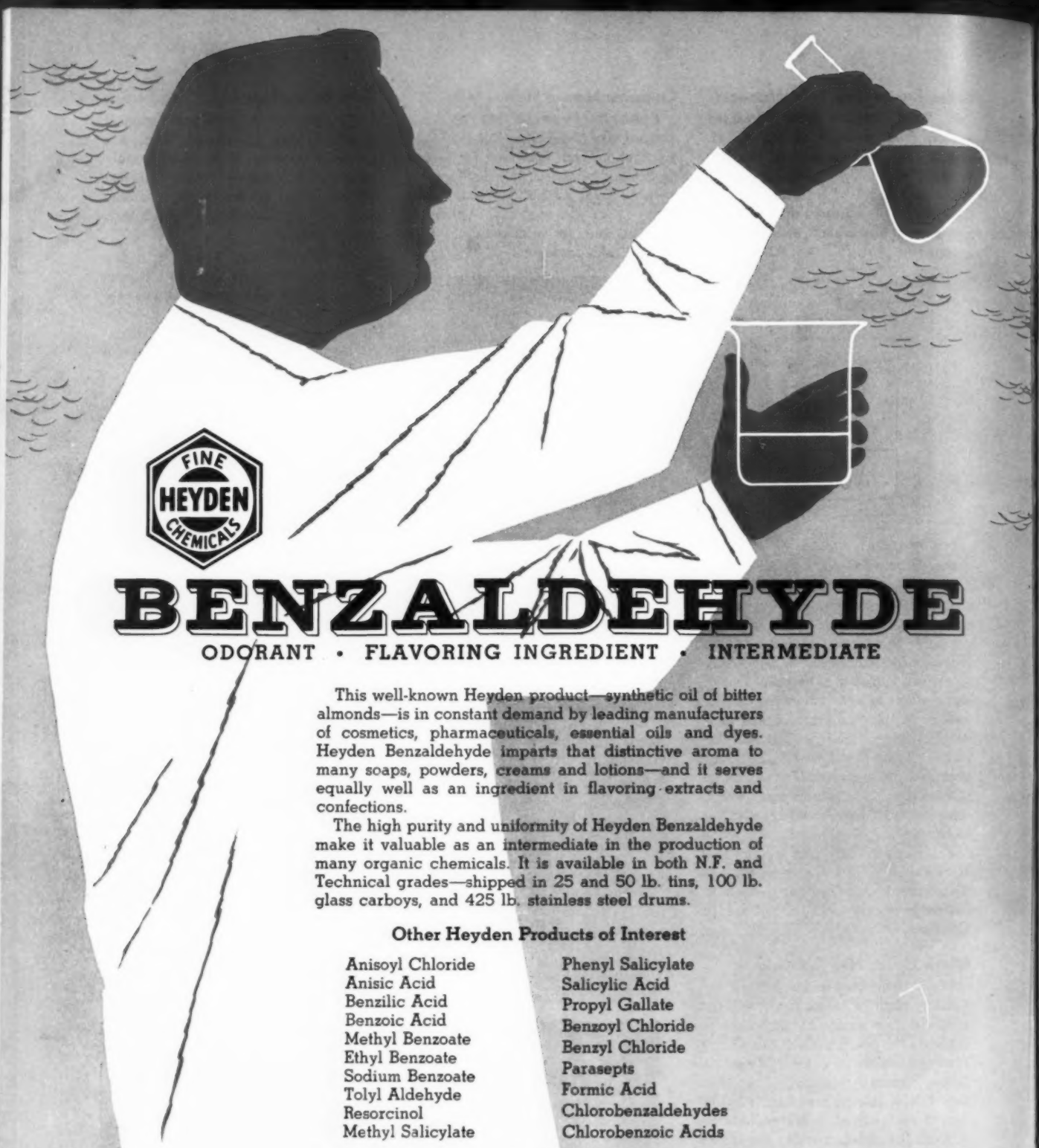
P. H. Groggins has been named general chemical consultant by the administrative office for the chemical divisions of Food Machinery and Chemical Corp. He will report to Dr. M. Y. Seaton, senior vice-president and technical coordinator of the chemical divisions.

Mr. Groggins retired on January 1, 1953, from a 26-year term of service with the Department of Agriculture, and more recently, with N.P.A. of the U. S. Government.

## Jarecki Named Branch Manager

R. A. Jarecki has been appointed branch manager of the commercial office in Chicago of Winthrop-Stearns Inc., according to Dr. Theodore G. Klumpp, president. He had formerly been sales manager in charge of the central states territory for the Bayer Company division of Sterling Drug Inc. since 1949.

Richard A. Wagner, manager, professional service department, Smith, Kline & French Laboratories, reviewing detailing schedule for SKF's Neo-Penil with Walter A. Munns, vice-president in charge of medical promotion, and John M. Cox, assistant manager of professional service department. Regional managers are, from far left to right: William M. Leslie, central; Joseph A. Stemmle, New York; Laurence C. Bleiler, northeastern; Anthony G. English, southern; David W. Low, western; Edwin F. Kazer, western central; and William M. Speers, middle eastern.



# BENZALDEHYDE

## ODORANT • FLAVORING INGREDIENT • INTERMEDIATE

This well-known Heyden product—synthetic oil of bitter almonds—is in constant demand by leading manufacturers of cosmetics, pharmaceuticals, essential oils and dyes. Heyden Benzaldehyde imparts that distinctive aroma to many soaps, powders, creams and lotions—and it serves equally well as an ingredient in flavoring extracts and confections.

The high purity and uniformity of Heyden Benzaldehyde make it valuable as an intermediate in the production of many organic chemicals. It is available in both N.F. and Technical grades—shipped in 25 and 50 lb. tins, 100 lb. glass carboys, and 425 lb. stainless steel drums.

### Other Heyden Products of Interest

Anisoyl Chloride
Anisic Acid
Benzilic Acid
Benzoic Acid
Methyl Benzoate
Ethyl Benzoate
Sodium Benzoate
Tolyl Aldehyde
Resorcinol
Methyl Salicylate
Phenyl Salicylate
Salicylic Acid
Propyl Gallate
Benzoyl Chloride
Benzyl Chloride
Parasepts
Formic Acid
Chlorobenzaldehydes
Chlorobenzoic Acids

Technical information and samples of Heyden Benzaldehyde—or any of the chemicals listed here—are sent promptly on request.

## HEYDEN CHEMICAL CORPORATION

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*SERVING INDUSTRY THROUGH FINER CHEMICALS*

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Creosotes • Formaldehyde • Formic Acid • Glycerophosphates • Guaiacols
Hexamethylenetetramine • Medicinal Colloids • Methylene Disalicylic Acid
Neomycin • Paraformaldehyde • Parahydroxybenzoates • Penicillin • Penteerythritols
Propyl Gallate • Resorcinol • Salicylates • Salicylic Acid • Streptomycin

PAUL R. WOLFGANG

### Wolfgang Heads Squibb Vet. Sales

Paul R. Wolfgang has been appointed manager of the veterinary sales department of E. R. Squibb & Sons, division of Mathieson Chemical Corp., according to J. J. Toohy, vice-president in charge of sales. He had formerly been manager of Veterinary and Animal Husbandry Activities for Merck & Co. Mr. Wolfgang succeeds Donald G. Perkins who will serve as special consultant to the company on veterinary sales and promotion.

### Schlittler Appointed by Ciba

Dr. Emil Schlittler, authority on the chemistry of alkaloids, has been appointed director of chemical research for Ciba Pharmaceutical Products, Inc., according to T. F. Davies Haines, president. He is succeeding Dr. Caesar Scholz, who joined Ciba 12 years ago to set up hormone manufacturing, and is now returning to Ciba Limited, Basle, Switzerland. Dr. Schlittler is associate professor of Organic Chemistry at the University of Basle, and has been vice-director of Ciba Limited.

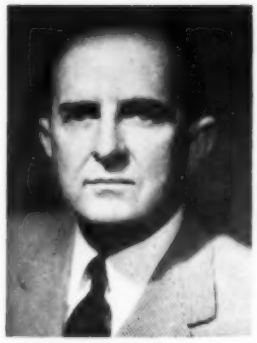
### Lilly Appointments

Jasper P. Scott has been appointed to the newly created post of executive director of operations planning at Eli Lilly & Co.

Robert H. Rhodehamel has been promoted to director of the new product addition studies division.

### West Disinfecting Honors Marcuse

Twenty-two of the West Disinfecting Company's 68 plants and district branches throughout the United States and Canada held simultaneous employee parties on December 31 in honor of M. M. Marcuse, chairman of the board, who is completing 50 years of continuous service with the company.



WILLIAM L. SIMS II

### Sims Heads Colgate International

William L. Sims II has been elected president of Colgate-Palmolive International, a newly-formed corporation, according to E. H. Little, president. He has also been elected to the executive committee of Colgate-Palmolive-Peet Co. and will continue as executive vice-president in charge of its foreign business.

R. A. Hart, J. C. Rebaza, M. B. Morton, W. B. B. Fergusson, E. A. Spicka, G. A. Glossop and H. F. Blum have been elected vice-presidents of Colgate-Palmolive International.

### Resigns from Metal Container

Having been appointed assistant to the Secretary of Commerce of the United States, Stanley M. Rumbough, Jr. has resigned as president of Metal Container Corp. and secretary and director of sales of White Metal Manufacturing Co.

H. Robert Miller, formerly assistant director, has been named director of sales of White Metal, and Charles Stiassni, plant manager, has been elected secretary of the company.

### Lowell M. Palmer Fund Established

The Lowell M. Palmer Fund for Senior Fellowships in the Medical Sciences has been established at Cornell University Medical College, according to Dr. Joseph C. Hinsey, Dean, by gifts from Carleton H. Palmer, former chairman of the board, E. R. Squibb & Sons, in memory of his father, the late Lowell M. Palmer. It was created in recognition of the great importance of providing some means for the continued support of young men and women who have proved their ability as medical teachers and scientists while on post-doctorate fellowships.

Cornell Medical College will handle the administration of the fund, but the recipients of the Senior Fellowships will not be limited to the Cornell Staff and will be chosen by a board which includes representatives from several other medical schools. The committee will consist of Dr. Walsh McDermott as chairman, and Dr. Geoffrey Rake as vice-chairman as permanent members, together with four rotating members to serve for a period of one year. The fund, which may receive periodic additions, will expend its principle.

It is anticipated that about five Lowell M. Palmer Senior Fellowships will be available during the first year of the operation of the fund.

### Degener, Heyden Sales Manager

Fritz Degener has been appointed general sales manager of chemicals for Heyden Chemical Corp., according to Simon Askin, president. He has been associated with Heyden since 1930, and has been assistant sales manager since 1948.

M. M. Marcuse, left, chairman of board of directors, West Disinfecting Co., receiving plaque in commemoration of 50 years' leadership of company. Joseph A. Martinka, with firm over 40 years, is making presentation, while James E. Marcuse, president, looks on.

# COOPERATIVE EFFORTS *in the* FIELD OF SCIENCE

THE COSMETIC INDUSTRY has always recognized that the scientific background of its products is the ultimate basis of its success. The American Manufacturers of Toilet Articles, predecessor to The Toilet Goods Association, engaged in cooperative research work many years ago at Columbia University and other institutions of learning.

THE TOILET GOODS ASSOCIATION upon its inception established a Scientific Advisory committee, the personnel of which was recruited from the technical staffs of member companies. This committee's early work was largely responsible for the fact that the Federal Food, Drug and Cosmetic Act is both adequate and reasonable. The committee also performed yeoman service during the war in the development of substitutes for scarce materials, and it is largely due to its efforts that the industry was permitted to live and prosper during a period when many of its classic raw materials had to be diverted entirely to the national defense.

THE DREAM of adequate standards for cosmetic raw materials, sponsored as "Odorgraphia" by A.M.T.A. was revived by the T.G.A. The Scientific Advisory committee is constantly working on adequate standards for cosmetic raw materials. It has succeeded in producing more than 40 of such standards and most of them call for a higher degree of purity than is required by the U. S. Pharmacopoeia.

NATURALLY, this type of scientific work led to much research which should be published. As a result the Association formed its Scientific Section whose membership consists of upwards of 500 scientists engaged by member companies in research, control and production. The Section holds two meetings a year at which reports, papers and addresses of great scientific importance are presented. These are published immediately after each meeting in a technical magazine, "The Proceedings of the Scientific Section of the Toilet Goods Association". In the few years during which this magazine has been published, it has received world-wide recognition as undoubtedly the finest technical publication devoted entirely to the cosmetic field.

THE SCIENTIFIC activities of the T.G.A. are just beginning. Plans are under way for a broadened program of research for the entire industry. A project covering allergies, sensitivities and irritations, the results of which will soon be published, has already been sponsored at a leading university. Other similar projects are having careful consideration.

YOUR ASSOCIATION stands for scientific progress and will continue and broaden its scientific program, a program which can only result in better and better toilet goods for the benefit of a constantly expanding number of satisfied consumers.

THE TOILET GOODS ASSOCIATION, INC.
9 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

*Further advertisements in this series will present to the industry what we feel will be an interesting picture of your Association's activities. Please read them and get to know us better.*

### Du Pont to Build Methionine Plant

E. I. du Pont will begin construction early this spring on the first of the manufacturing units to be located on its tract of land near Beaumont, Texas, which will provide facilities for the synthesis of methionine. It will be operated by the organic chemicals department.

The cost of the initial installation is estimated at $4 million, with the plant expected to go into production late in 1954.

T. L. Pierce of the company's engineering department, will be superintendent in charge of construction, while Williard F. Sheldon and Melbourne K. Richards, development engineers in du Pont's organic chemicals department, have been appointed superintendent of development and works engineer, respectively, of the new Beaumont Works.

### McClure Promoted by Vick

G. B. McClure, vice-president of Vick International, a division of Vick Chemical Co., has been promoted to assistant general manager of that division, accoring to E. P. Anderson, president and general manager. He will head up the division's new products development program and will continue to be responsible for all phases of operation in Asia, as well as supervising operations in the British Isles and the Philippines.

G. B. McCLURE

### Tracy Elected Enjay President

Osgood V. Tracy, general manager of the chemical products department of Esso Standard Oil Co., New York, has been elected president of Enjay Co., a sales affiliate marketing petroleum chemicals nationally. He succeeds John A. Britton, Jr., president of Enjay since 1948, who plans to retire during 1953 but will continue as a director and advisor on sales until his actual retirement.

New officers of Chicago Chapter of Society of Cosmetic Chemists who were installed during a recent meeting. Left to right: Dr. H. F. Davidson, Jules Montenier, Inc., treasurer; Douglas Atlas, Marcelle Cosmetics, chairman; Robert Appenzeller, G. Barr & Co., secretary; and William Colburn, Colburn Laboratories, chairman-elect.

### Nehring Appointed by Squibb

Fred W. Nehring has been appointed professional service manager for the St. Louis sales division of E. R. Squibb & Sons, according to J. J. Toohy, vice-president in charge of sales. He had formerly been manager of hospital and institutional sales at New York for Squibb.

### Herbert F. Storfer, Sales Director

Herbert F. Storfer has been appointed director of sales of Parfums Corday Inc. He has been with the company for seven years, originally starting in the accounting department and later advancing to the position of advertising manager.

HERBERT F. STORFER

### Sulfanilamide from Merck Plant

The new Flint River plant of Merck & Co., Inc. has completed the first production of sulfanilamide, according to H. N. Fiaccone, plant manager. Part of the output has been shipped by truck to Rahway, N. J., for distribution throughout the world, while other production lots will be sent to the company's Stonewall plant at Elkton, Virginia, for further processing into finished products.

### Shulton Annual Sales Meeting

Fifty-three members of Shulton, Inc. attended a 3-day conference at the Ponte Vedra Club, Florida, during its week-long annual sales meeting from December 14 to 20. Special presentations were conducted by Frank N. Carpenter, general sales manager; Maxine Rowland, advertising manager; Charles O'Connor Sloane, account executive of Wesley Associates Advertising agency; Mike Meyer, assistant to the sales manager; and Lee Russell, publicity director.

During the balance of the week separate forums were held by branch managers Norton Breiseth, West Coast; Paul Stoneman, Southwest; William Guindon, Midwest; Richard Parks, Atlantic division; James Murphy, Northeastern; and George Thomson, Canadian operations.

Members of the Shulton sales staff who attended the meeting were: Mrs. Tess Tinker, Jack Wilson, Mike Meyer, Edward Burns, Ed Commons, William Hayes, Lewis Scanlan, Ralph Sheridan, Joseph Swickert, Stephen Backiel, James Beatty, Don Boland, Clarence Burt, Francis Czito, Harvey Essex, James Freel, Bertha Murray, Frank Steed, Herman Williams, Bert Davis, Wilfred Hartley, Marvin Hindorff, John Hutchins, Robert Jung, James Luse, Edward Manning, Elmer Munden, Allen Pearsall, Roy Stogner, Roy Wagner, William Coffin, Paul Cole, Al Guard, H. A. Roth, Reuben Williams, Richard Card, Johnson Curtis, John Dillon, Gerald Gurley, Hugh Osborn and Charles Williams.

### Mann, Bristol Medical Director

Dr. Charles H. Mann has been appointed medical director of Bristol Laboratories, according to Frederic N. Schwartz, president.

**"Chlorophyll vindicating early claims"—**
**—"Another Boom in the Offing"—*says the N. Y. Journal of Commerce***

**Choose American Chlorophyll now as your supplier. Our manufacturing experience of over 20 years is your guarantee of a safe, reliable end product —one worthy of your trademark.**

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**Strong Cobb & Co. Inc.** **Lake Worth, Florida**

* Chlorophyll is Oil Soluble, Chlorophyllin is Water Soluble

## Milano Heads Salesmen's Ass'n

Robert J. Milano, president of the Millmaster Chemical Corp., and of the Berkeley Chemical Corp., was elected president of the Salesmen's Association of the American Chemical Industry on January 21, succeeding Edward A. Bush of Bush Aromatics division of the Dow Chemical Co.

Other officers elected were Warren F. Schumacher, J. T. Baker Chemical Co., vice-president; John F. Henry, Adams-Henry Chemical Co., treasurer; and Edward L. Collins, Chilean Nitrate Sales Corp., secretary.

Elected to the board of directors for two-year terms were Ralph L. Ericsson, Sumner Chemical Co.; LeRoy P. London, E. I. duPont de Nemours & Co.; George E. Kuehn, Carbide & Carbon Chemicals Division of Union Carbide & Carbon Corp.; Harry P. Smith, Mathieson Chemical Corp., and Walter T. Johnson, Columbia-Southern Chemical Division of Pittsburgh Plate Glass Co. Vincent L. Rebak, recently resigned from Heyden Chemical Corp. was elected for one year.

## Johnson Advanced by Ayerst

C. M. Johnson, sales manager in charge of the U. S. division, Ayerst, McKenna & Harrison Limited, has been elected vice-president in charge of sales, according to W. Boyd O'Connor, president. At the same time, W. C. Putnam has been appointed division sales manager of an area covering 11 western states, with headquarters in Los Angeles.

## Behrens, Coty Advg. Director

Albert M. Behrens has been appointed advertising director of Coty Inc., according to Philip Cortney, president. He succeeds Walter Neuberg who has retired after 32 years with the company. Mr. Behrens had previously been advertising director for both Elizabeth Arden and Lentheric.

ALBERT M. BEHRENS

"Oldtimers" of Foragers of America who were honored last month during 56th annual banquet of organization. Left to right, back row: Walter Rochelle, James Doherty, C. R. Keeley, William Volk, Thomas Gladding, William Denney, Richard Powell, George Zinnell and Hugh Finn. Front row, Aaron Chisholm, John Wilde, Robert Arcularius, Jack Brennan, William Nielson, William Killcullen and Nelson King.

## Corkran Honored by Rowell Co.

Sewell H. Corkran, who retired on December 31 after 22 years as the New York representative of the Rowell Co., and Mrs. Corkran, were guests of honor at a dinner given recently at the Hotel Pierre by Mrs. E. N. Rowell, president of the company. Preceding the dinner a cocktail party was given at the Barclay Hotel by Mr. and Mrs. Ross A. White.

Mr. Corkran has been succeeded in the New York territory by Mr. White who has been associated with him in the company for many years. He will be assisted by Walter E. Klaas.

## Lewis Promoted by Toni

Joseph T. Lewis, brand manager of Prom home permanent, has become brand supervisor of all Toni Co. home permanent waving products, according to R. N. W. Harris, president. He succeeds Wilmore H. Miller who was recently named vice-president of Toni in charge of advertising, brand promotion and market research.

JOSEPH T. LEWIS

## Anslinger Receives Procter Medal

Harry J. Anslinger, Commissioner of the Treasury Bureau of Narcotics since its founding in 1930, was awarded the Procter Medal by the Philadelphia Drug Exchange at their 92nd Annual Dinner on February 5. He is cited by the Exchange specifically for his eminent leadership in, and his unselfish devotion to, the world-wide control of narcotic drugs, and for his many contributions to general publications and specialized magazines in criminology and medicine.

Among his other achievements, Mr. Anslinger has been appointed to diplomatic posts in the Netherlands, Germany, Venezuela and the Bahamas; Representative on the United Nations Commission on Narcotic Drugs; Member of the Efficiency Board, Ordnance division, War Department; chairman, Advisory Committee on International Cooperation Criminal Law Administration, American Bar Association; and consultant and advisor of many governments on Narcotic control.

Previous recipients of this award have been Dr. Ivor Griffith, Dr. Charles E. Vanderkleed, C. Mahlon Kline and Dr. Alfred Newton Richards.

## Stoll Wins Fritzsche Award

Dr. Max Stoll, top-ranking research associate of Firmenich & Cie., Geneva, Switzerland, has been awarded the Fritzsche International Award for outstanding achievement in the field of essential oils and related chemicals for 1953.

He will shortly visit the United States to receive the Medal Award from the American Chemical Society at their spring meeting in Los Angeles.

Carr-Lowrey Opal Jars meet the packaging requirements of a wide variety of products. They can be supplied either plain or with fired-on ceramic decorations.

CARR-LOWREY GLASS CO.

*Designers and manufacturers of fine glass containers*

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### Black Promoted by Dow

Donald B. Black has been named head of fine chemical sales for the Dow Chemical Co., according to Donald Williams, director of sales, succeeding James Day who recently joined the New York office executive staff.

DONALD B. BLACK

### MM&R Annual Sales Conference

Magnus, Mabee & Reynard, Inc. held its 22nd annual sales conference at the Gramercy Park Hotel, New York, January 8, 9 and 10. P. C. Magnus, in his keynote and closing talks, reviewed world conditions in respect to essential oils and set forth the company's aims for 1953.

A. H. Downey, head of the technical research department, presided over the intensive 3-day meeting and was assisted by E. K. Edie. Sales representatives from the United States, Canada and Cuba attended the conference.

### Dublin, Consultant to HIF

Louis I. Dublin has been appointed consultant to the Health Information Foundation, according to William H. P. Blandy, president.

### Appointed by Barbara Gould

James S. Hauck, formerly assistant sales manager of Elizabeth Arden Sales Corp., has been appointed field sales manager for Barbara Gould, Inc. cosmetic preparations.

JAMES S. HAUCK

### Amer. Chlorophyll Appointments

Dr. Everette M. Burdick has been appointed director of laboratories and Neil C. Spencer, chief of control department, American Chlorophyll division of Strong Cobb & Co., Inc., according to M. M. Ricketts, general manager.

DR. EVERETTE M. BURDICK

### Roney with Foster-Forbes

Ray W. Roney is joining William P. Foster as sales representative for the Chicago territory of Foster-Forbes Glass Co., according to John M. Foster, president.

### Caleb Coffin

Caleb Coffin, advertising manager and director of public relations of E. R. Squibb & Sons, died January 15 in his home at 130 East 75th St., New York, after an illness of several months. He was 44 years old. He began his business career with the John Price Jones Corp., as an account executive and left that organization in 1942 to enlist in the Army Air Forces. He became associated with Squibb after the war.

Mr. Coffin is survived by his wife, Mrs. Mary Delafield Coffin; his mother, Mrs. Herbert L. Coffin; and a sister, Mrs. Gordon S. Cushman.

### Henry D. Faxon

Henry D. Faxon, formerly regional vice-president and a director of McKesson & Robbins, died January 22 in Santa Monica, Calif., where he had been living in retirement for several years. He was 80 years old and had been associated with the McKesson organization and predecessor companies for 57 years.

He is survived by two daughters, Mrs. Bradley J. Saunders and Mrs. Carroll Dunn.

### Edward Fetterly

Edward Fetterly, president and founder of Hudson Pharmacal Co., died January 3 at his winter home in Tarpon Springs, Florida. He started working at the age of 19 with Swift & Co. and was promoted from one post to another. In 1900 he was named manager of the largest branch of the company in New York.

### Frederick Firmenich

Frederick Firmenich, head of Firmenich & Cie, Switzerland, died January 5 at his home in Geneva. Mr. Firmenich was well known in this country as he made many trips here in past years to call on his many American friends.

### E. F. Heffner, Jr.

E. F. Heffner, Jr., vice-president and general sales manager of the A. H. Robins Co., died suddenly on December 27 at Richmond. He had been in charge of sales for the company since 1942 and became vice-president in 1951. He is survived by his widow and by three sons, William C., E. F. Heffner, III, and James J.

### Charles F. Kessler

Charles F. Kessler, 63, secretary-treasurer and chief chemist of the William A. Webster Co., died December 23 after a brief illness. He had been associated with that company for more than 40 years.

He is survived by his widow, Mrs. Mabel Kessler; four sons, Charles T., Norris A., William Robert, and Richard E. Kessler; and two daughters, Bernice D. Kessler and Mrs. Ethel Adamson.

### William C. Leonhard

William C. Leonhard, president of Theodor Leonhard Wax Co. for the past 16 years, died at his home in Yardley, Penna., of a heart attack on January 7. He had also been president of the Paterson Parchment Paper Co., Bristol, Penna., and has been actively associated with both companies during his entire career.

He leaves a widow, Helen Edwards Leonhard, and a son, John Edwards Leonhard; a daughter, Mrs. Philips Brooks; two grandchildren; and a sister, Mrs. Richard T. Anderson.

### C. F. Sauer Jr.

C. F. Sauer Jr., president and treasurer of C. F. Sauer Co., died at his home in Richmond, Virginia, January 18 at the age of 62. He had headed the firm since the death of his father, founder, in 1927. Survivors include his mother, Mrs. C. F. Sauer, Sr., three sons and a sister.

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The dentifrice manufacturer enjoys a special trust that his customers place in his product. To remain faithful to that trust his product must be made of only the finest ingredients. Sturge Precipitated Calcium Carbonate U.S.P. is such a product. Its capacity to form stable dispersions in glycerine-water mixtures, its mild and controllable detergent action on teeth and, above all, its chemical inertness and physical harmlessness to tooth surfaces make Sturge P.C.C. a necessary raw material for the finest tooth pastes and powders. The producer, John & E. Sturge, Ltd., of Birmingham, England, will meet your special density requirements. Write today on your company letterhead for a sample and further information.

*specify*

**STURGE PRECIPITATED CALCIUM CARBONATE**

*for* Dentifrice & Cosmetics · Paper-making & Coating · Paints & Distempers · Rubber & Plastics Drugs · Fermentation Processes · Printing Inks

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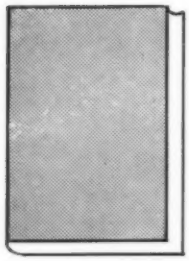
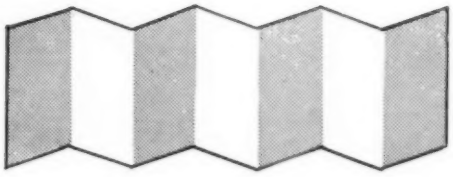


# Trade Literature



### Ethylbenzene Booklet

A booklet which brings together chemical, physical, and reaction data on ethylbenzene, a highly reactive aromatic hydrocarbon, has been published by Monsanto Chemical's Texas Division, Texas City.

### Nitrofurazone in Coccidiosis

Dr. Hess & Clark, Inc., Ashland, Ohio, has issued a single page bulletin on effective treatment of coccidiosis with nitrofurazone.

### Control of Industrial Dermatitis

The Control of Dermatitis in Industry is the title of a 24-page booklet being distributed by West Disinfecting Company, 42-16 West Street, Long Island City 1, N. Y.

### Eastman Organic Chemicals

Distillation Products Industries, Division of Eastman Kodak Company, Rochester 3, N. Y., has issued List No. 38 of Eastman Organic Chemicals. This 220 page book lists more than 3,500 organic compounds.

### Emery Booklet

A booklet describing Emery Industries' 12-hydrostearic acid and hydrogenated castor oil is now available from the company at Dept. 5, Carew Tower, Cincinnati 2.

### Aliphatic Nitrogen Compounds

Aliphatic Nitrogen Compounds is the title of a 48-page booklet issued by Carbon & Carbide Chemicals Company, 30 East 42 St., New York 17. The book discusses in detail the 35 aliphatic nitrogen compounds of the company, their uses in many industries, physical properties, specifications, shipping data, and constant boiling mixtures. A bibliography gives important references in chemical literature.

### Chlorophyll in Medicine

Chlorophyll in Medicine is the title of a booklet published by Rystan Company, Mount Vernon, N. Y.

### Pfizer Vitamin C

Pfizer Vitamin C is the title of a booklet issued by Chas. Pfizer & Co., 630 Flushing Ave., Brooklyn, N. Y.

### Industrial Chemicals

Atlas Powder Company, Wilmington Del., has issued a booklet on Atlas Industrial Chemicals, which include polyols, surfactants, plasticizers, textile chemicals, polyester resins, fatty acids, and activated carbons.

### Pack to Attract

Hinde & Dauch, Sandusky, Ohio, have issued a booklet entitled Pack to Attract—A Portfolio of Merchandising Ideas from the H & D Package Laboratory.

### Chemistry Handbook

Handbook for Chemistry Assistants, a booklet issued by Fisher Scientific Company, 717 Forbes Street, Pittsburgh 19, is available on request.

### Calco PAS Bulletin

Calco Chemical Division, American Cyanamid Company, Bound Brook, N. J., has issued bulletins on PAS Purity and Mixed Anemias—Multiple Nature of Nutritional Deficiencies.

### Caustic Soda Booklet

Wyandotte Chemicals Corporation, Wyandotte, Mich, has issued a 56-page booklet on Caustic Soda which should be of value to everyone using this chemical.

### Witco Service Report

Witco Chemical Company, 225 Madison Ave., New York 17, has issued a technical service report on Witco Stabilizer No. 90—a nontoxic stabilizer.

### Alcohol Data Sheet

A newly revised data sheet which lists typical analyses for fourteen types of Cachalot brand cetyl, oleyl, and stearyl alcohols, including NF, USP, technical, and commercial grades used in the drug and cosmetic industry is available from M. Michel and Company, 90 Broad St., New York 4.

### Methanol Booklet

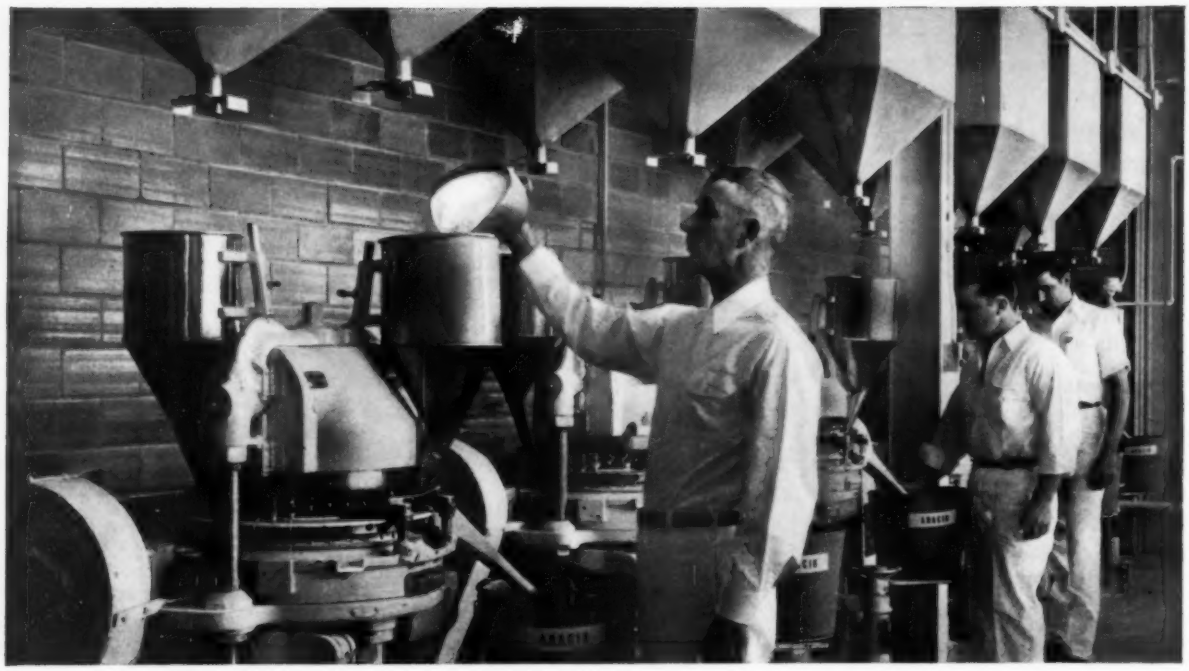
Commercial Solvents Corporation, 260 Madison Ave., New York 16, has issued a booklet on Methanol, giving uses, toxicology, shipping and handling, specification test methods, etc., as well as charts and tables presenting physical properties.

### Sindar Catalogue

Sindar Corporation, 330 West 42 St., New York 36, has issued a catalog containing complete information on Sindar's odors for industry, germicides, and fungicides, stabilizers, anti - oxidants, and anti-skinning agents.

### Croda Alginates

Croda Inc., 51 Madison Ave., New York 10, has issued a booklet on Alginates imported from A. S. Protan, Drammen, Norway.



# 2,500,000,000 Anacin Tablets per year

. . . that's the production capacity at the huge Whitehall Pharmacal Company plant in Elkhart, Indiana. A battery of nine Stokes Model BB-2 rotary tabletting presses now turns out 1,350 Anacin Tablets per press per minute. Eight more Stokes BB-2 presses now producing other Whitehall products can be called into service at any time to produce a total of 23,000 Anacin Tablets per minute, or 2,500,000,000 per year, on the basis of one eight-hour shift.

Whitehall's familiar symbol is clearly embossed on each Anacin Tablet as it passes through the Stokes press. Finished Anacin Tablets are accurate in weight, uniform in density, attractive in appearance.

Economical, long run, high speed production up to 1,900 tablets per minute is typical of Stokes rotary tabletting presses. A minimum of labor and servicing is required to operate these presses at maximum efficiency, a feature of special importance to plants located at considerable distances from service facilities and parts depots.

For production by the hundred or the million, Stokes has the right machines and proved techniques to help you realize practical and profitable manufacture. Stokes Advisory Service is available, at no obligation, to help solve such problems as tablet formulas, punch and die design, and improved operating procedures.

F. J. Stokes Machine Company,
Philadelphia, Pa.

**STOKES**

STOKES MAKES Plastics Molding Presses / Industrial Tabletting and Powder Metal Presses / Pharmaceutical Equipment / Vacuum Equipment / High Vacuum Pumps and Gages / Special Machinery

# Management Forum

*by Francis Chilson*

INDUSTRIAL CONSULTANT

### Push Loader

Development of a new load-pusher attachment for fork trucks, designed to speed the handling of bulky, unpalletized loads such as baled scrap, paper or textiles—and the loading of highway carriers unable to accommodate fork trucks because of their floor load capacities or low overheads has been announced by The Baker-Raulang Company.

Baker's pusher allows fork truck users to pick up large, unpalletized loads, haul them to discharge points and unload them in seconds—with no manual handling involved.

It can also be used to unit-load highway carriers which fork trucks cannot enter. In this application, the operator pushes loads into the carrier without entering it. First-in loads are moved forward in the carrier by the loads that follow.

The new pusher takes advantage of a basic law of physics: for every action there is an equal and opposite reaction. Both the action and reaction of the attachment's hydraulic cylinder are used. A free-floating jack is used to actuate and equalize the action of two sets of levers which move the pusher arms. Positive control over pushing pressure is available from the driver's position, through the use of a metering valve.

This feature has been built into the attachment to guarantee smooth handling of any load, regardless of its fragility.

Distance from the fulcrum point (center of the truck's front wheels) to the pusher face is considerably less than any other available attachment of this type, providing greater payload capacity and load stability than older designs, according to Baker. Installation of the new pusher on a fork truck reduces the load capacity of the truck only about 10 per cent.

The new Baker load-pusher is available on lift trucks in capacities from 2000 to 6000 pounds.

### Plastic Pipe Has Uses

Transparent plastic pipe and fittings of cellulose acetate butyrate in sizes ranging from ½ inch through 4 inches are now available for laboratory and pilot plant use. Known as Mills III, the new pipe offers many advantages for handling oils, gasses, water, slurries and a wide variety of chemicals because it permits observation of processes, and has extremely high resistance to corrosion and other forms of chemical attack.

Sections of the pipe are quickly and easily joined by a solvent cement that produces a leak-proof, homogeneous bond. No threading or special tools are required, even when connecting to standard steel pipe and fittings. Cuts easily with ordinary hand saw. Set-ups may be dismantled and all components used over and over again — alterations in any set-up can be made in minutes.

A complete assortment of Milex plastic fittings is available for use with Mills III pipe, including flange unions and flange adapter unions for joining plastic to steel or plastic to plastic, as well as the usual ells, tees and couplings. Two flange adapters and a length of the pipe make up a clear and reliable sight glass. Other uses include vent lines, drain lines, compressed air lines, condenser jackets, etc.

Mills III is tough, shatterproof, and requires a minimum of support. Although semi-rigid, it is flexible enough to permit broad radius bends and considerable misalignment. Sizes up to 2 inches have a working pressure of 100 lbs. per square inch at 100° F.

There are almost no limits to the laboratory uses of unique Mills III pipe. It is reasonable in cost, the smaller sizes actually costing less than a good grade of laboratory tubing. Black pipe made of the same material is also available from this manufacturer. *Manufacturer:* Elmer E. Mills Corporation, 2930 North Ashland Avenue, Chicago 13, Illinois.

### Laboratory Planning Kit

Development engineers of Fisher Scientific Co. announce a kit which permits custom installations of entire laboratory rooms without blueprints.

The unique kit contains scaled cut-outs, representing

# Designed FOR THE JOB . . . Does THE JOB!

# DAY

## PHARMACEUTICAL PROCESSING EQUIPMENT

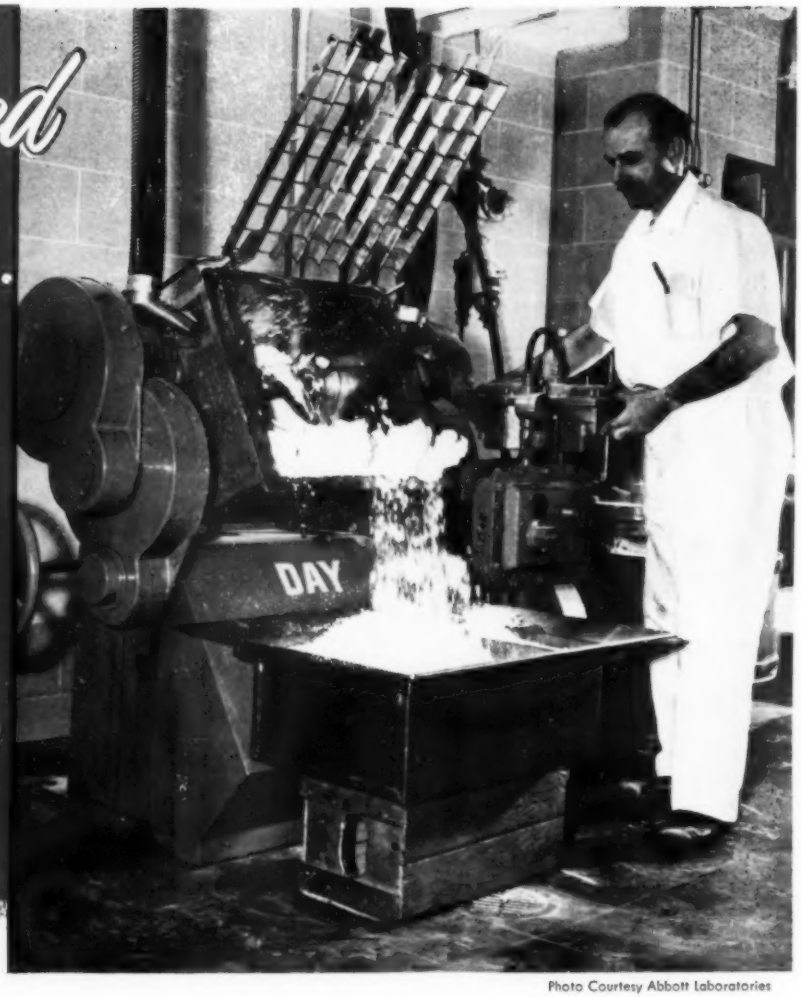



Photo Courtesy Abbott Laboratories

Efficient method for wet granulation is shown in this picture of a Day Stainless Steel Double Arm Mixer, used to combine powder and binder in the manufacture of medicinal tablets.

**Pharmaceutical plants, with their emphasis on precision production and sanitation, are no place for makeshifts. That is why Day equipment, designed specifically for the job at hand, is first choice among so many drug and cosmetic manufacturers.**

**One example is the Day Double Arm Mixer. Counter-rotating sigma type agitators, operating at a 3 to 2 ratio, insure fast, thorough mixing action. Dependable gear drive and power dump are standard features. Finally, Stainless Steel tank and agitators are big aids to maintenance of high sanitary standards.**

***Call your nearby J. H. Day Sales Engineer for detailed data, or write direct for informative literature.***

## DAY ALSO MANUFACTURES

**THREE ROLL MILLS** in laboratory and production models for grinding all types of paste materials.

**PONY MIXERS** for mixing powders and pastes with vehicles.

**RO-BALL SIFTERS** for fast, accurate sizing of powder materials.

**PENICILLIN SHAKERS** for uniform agitation of all types of cultures.

**BLENDERS** with spiral ribbon agitators for pastes, granular or liquid materials.

DAY

**THE J. H. DAY COMPANY, 1148 HARRISON AVE., CINCINNATI 22, OHIO**

INCORPORATED • FOUNDED 1887

21 ready-made, pre-engineered steel furniture units. The cut-outs can be manipulated on the kit's graph paper (a half inch on the paper equals a foot in the lab room).

Heights of assemblies can be allowed for just as easily as floor areas by means of the kit's booklet, which gives front and side-view dimensional drawings.

Finally, even laboratory utilities (gas, electricity, water, cup sinks) can be marked on the plan and ordered as part of the ready-made furniture line.

Included with the kit's graph paper, scaled cut-outs and dimensional booklet is a complete catalog of unitized furniture and photographs of suggested laboratory installations.

For additional assistance with complex laboratories, Fisher Scientific will set up actual furniture models on a submitted layout, photograph them.

Since 1945, Fisher development engineers have made a special study of techniques for extra-fast emergency laboratory installations, and one result of their pioneer scale-models-plus-photographs method was the almost overnight installation of a control lab at Koppers' tar products division following the Kearny fire in 1948.

The Laboratory Planning Kit is the newest and final step in this seven-year study. The Kit is packaged in a sturdy folder and is available free upon request from FISHER SCIENTIFIC COMPANY, 717 Forbes St., Pittsburgh 19, Pa. Also: FISHER SCIENTIFIC COMPANY, LTD., 904 St. James St., Montreal, P. Q., Quebec, or 245 Carlaw Ave., Toronto 8, P. O., Canada.

### Tube Closer

Perl Machine Mfg. Company, 68 Jay St., Brooklyn, N. Y., announces a new "Magic" collapsible tube closing machine. This unique machine closes each tube automatically with three folds in one revolution, two folds in one direction, one in a reverse direction. The folds are made neat and sure and require neither crimping nor clips.

The operation of the machine is made simple so that maximum production can be obtained with unskilled help. The tube is merely inserted into the holder and the foot pedal depressed. The machine automatically closes the tube and stops itself.

Machines are available with interchangeable tube holders to accommodate tubes from ¼", to 2½" in diameter at speeds up to 50 tubes per minute.

### Spray Dryer

Foster D. Snell, Inc. announces a new booklet for companies and individuals interested in spray drying. This 8 page booklet entitled, "Zizinia Packaged Unit Spray Dryers" contains complete information as to performance and price on Spray Dryers engineered by Snell.

The trend toward spray drying by individual companies has increased over the last 6 years because the manufacturer with a limited budget has found that he can install a drying unit and operate it himself with a far greater saving than by using the more elaborate time consuming methods formerly employed, or by having his material processed for him.

Spray Dryers today are important for such products as soaps, syndets, sugar, coffee, tannins, milk, blood, eggs and pharmaceuticals. One of the latest products to succumb to spray drying is chlorophyll. Uses for dryers are unlimited. Some pharmaceutical manufacturers have found that they can spray dry the waste liquors from antibiotics and use this by-product for animal feeds. Foster D. Snell, Inc., 29 W. 15 St., N. Y. City 11.

### Filling Machine

A new, high speed, four line filling machine that fills all types of viscous products including glues, pastes, creams, paint, jellies, preserves, mayonnaise, peanut butter, oils, chemicals, etc., has recently been developed by The Filler Machine Co., Inc., Philmont Club Station, Philmont, Pa. This very durable, versatile filling machine fills all sizes and types of containers by the bottom up and clean-cut-off filling method, fills up to 80 containers per minute and has a range of from 4 ounces to gallons. A single adjustment centers different size containers under the filling nozzles and the upper filling head assembly adjusts easily for all container heights in clean-cut-off filling. New double linkage control for the bottom fill elevator provides more efficient and smoother operation in bottom up filling. Containers are indexed through the machine by a combination walking beam and pin lug type push rods which minimize starting and stopping impulses. Piston stroke is regulated by a single handwheel so that the machine does not have to be stopped for quantity adjustment.

A ¾ hp motor supplies power for the new Geyer filling machine which stands 5′ high and occupies a 3′ x 6′ space. Four point suspension permits easy cleaning under the machine. The unit can be easily equipped with a separate motor driven agitator. An automatic jar feeder and unscrambling equipment are also available

For additional information, write The Filler Machine Co., Inc., Philmont Club Station, Philmont, Pa.

### Plastic Pipe

Triangle Conduit & Cable Co. Inc., New Brunswick, New Jersey, manufacturers of electrical conduit, wire, and cable, has announced that the company will shortly be in production on two types of plastic pipe: Flexible and Semi-Rigid. Later, Rigid and High Impact plastic pipe will be added to the line.

Triangle Flexible Plastic pipe will be made of three types: non-toxic, industrial and suction. All three are made of polyethylene. The non-toxic type is made in sizes ½" to 6" and all sizes up to 3" are available in coiled form. Among its advantages are its extreme light weight, its flexibility, its smooth interior which allows greater flow and its resistance to rot, rust, and electrolytic action. It can be used for the conveyance of

# HIGH SPEED PRECISION LABELLING at low cost

"BANKS" LABELLER — fitted with power driven rotary in-feed table.

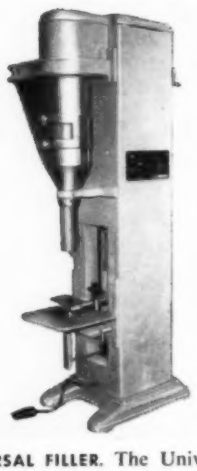
## WITH THE "BANKS" LABELLER

**Vials, jars and bottles** are precision labelled on a "Banks" at the rate of 2,400 to 10,200 per hour. This cost and time-saving volume output is accomplished with accurate label registration—whether front and back, all-round, or spot labelling.

Furthermore, the "Banks" uses no wipers or rollers; labels are protected against smearing, soiling or staining, and there is never any excess glue extending beyond label edge.

Other advantages include an electrical "No Bottle —No Label" device, Variable Speed Range adjustable while machine is running, and convenient accessibility to all parts for easy cleaning.

There is a "Banks" Labeller to fit your individual labelling operation. Write and tell us your requirements, or request illustrated "Banks" Catalog.



**UNIVERSAL FILLER.** The Universal Filler fills powders, granules, pastes and creams into jars, boxes, envelopes and cans by gross-weight, packing, or volumetric measurement.

**STOKES & SMITH CO.**

4912 SUMMERDALE AVENUE, PHILADELPHIA 24, PA.

*Pacific Coast:* SIMPLEX PACKAGING MACHINERY, INC., 534 - 23rd AVE., OAKLAND 6, CALIF.

SUBSIDIARY OF FOOD MACHINERY AND CHEMICAL CORPORATION

fmc FOOD MACHINERY AND CHEMICAL CORPORATION TRADE MARK

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liquids for human or animal consumption and finds application in the food and beverage industries, farming (poultry and live stock watering), jet well installations, and others. The industrial type has the same characteristics as the non-toxic except that its uses are in the mining industry for removal of corrosive liquids; chemical plants for conveying acids, alkalis, soaps, detergents and bleaching agents; in metal plating plants; irrigation on farms and golf courses; the conveying of natural or artificial gas; and sewage. The suction type, available in sizes 2″ through 6″, is designed for higher pressures in the larger sizes.

Triangle Semi-Rigid plastic pipe is made of Butyrate. It is available in ½″ through 6″ in twenty foot lengths with one coupling cemented. This type is flexible enough to follow ditching contours yet its impact strength eliminates special care in back filling. It finds its best applications in the petroleum industry as it is not affected by paraffin crudes, raw gas, sour crudes, or brine. Its chemical resistance and its resistance to rust, rot, and electrolytic action also make it acceptable for irrigation and draining systems, jet wells, chemical piping; gas service entrance lines; and in the food industry for conveying juices, beer, wine and carbonated beverages.

Both types will be manufactured in Triangle's new plant on Codwise Avenue in New Brunswick, New Jersey. A detailed booklet is available upon request. Address Plastic Products Division, Triangle Conduit & Cable Co. Inc., New Brunswick, New Jersey.

### Machine for Round Vitamin Pills

Pharmaceutical and Chemical Industry Supply Corp., division of American Roland Corporation, 16 Hudson Street, New York 13, N. Y., announces a new machine for the economical production of round vitamin pills. This efficient machine, known as the PILUTERM, acts on the following methods of operation:

The melted mixture of vitamin concentrates and solid fatty substances are measured off in exact portions of the desired size by means of a measuring syringe and a double-acting valve. This mixture is then conveyed through an orifice into a mixture of spirit of wine and water, containing 60.5 per cent of ethanol. During the passage, the mixture of fatty substance congeals, and the solid pills are accumulated in a glass container.

The fatty pills thus produced are then provided with a sugar coating in which water-soluble or alcohol-soluble vitamins can be incorporated.

One of the big advantages of the Piluterm machine lies in the precision with which dosages of vitamins can be controlled. The Piluterm can produce up to 15,000 pills per hour, in sizes from 10 to 100 mg., with exactness of dosage within ±1 per cent. This accuracy avoids sorting and waste. The size of the pills is adjustable. The accuracy of dosage and the high rate of production, coupled with the low initial cost of the apparatus assure economical vitamin pill production. For complete details, a 26 page brochure is available on request.

### Dermatitis

Skin diseases annually cost industry one hundred million dollars, the West Disinfecting Company points out in its new 32-page booklet, "The Control of Dermatitis in Industry". The firm, which manufactures industrial products for the promotion of sanitation and is the largest and oldest organization of its type in the world, calls this expense a needless waste. Prevention rather than cure is emphasized as the solution to the problem. It is pointed out that according to industrial physicians, 90 per cent of industrial dermatitis cases can be prevented by proper cleansing materials and methods, and correct supervision and instruction.

The new booklet presents a simple, inexpensive prevention and control program for guaranteeing personal cleanliness, protecting exposed skin areas, preventing clothing contamination, and guarding against special hazards. After outlining the problem, the booklet lists the conditions which should be checked to determine the cause of a case of dermatitis when it occurs. A six-page chart covering a wide range of industries lists various working conditions, types of dermatitis prevalent where these conditions exist, and suggested preventive measures for each. Brief descriptions of typical industrial skin troubles are included.

The booklet describes in detail various West products formulated to solve the special cleansing and sanitation problems of industry. For example, Lan-O-Kleen, which contains a comparatively high percentage of free lanolin, was one of the first products to provide the double action of cleaning and super-fatting to prevent the skin from drying out. West's *Sulpho* hand cleaner, containing sulphonated vegetable oil, also removes foreign matter from the skin without defatting it. These products were formulated to replace harsh cleansers which, in themselves, can cause certain types of dermatitis because of their abrasive and defatting action on the skin. Copies of "The Control of Dermatitis in Industry" may be obtained by writing the West Disinfecting Company, 62-16 West Street, Long Island City 1, N. Y.

### New Lab-Size Gravity Separator

Following completion of extensive experimental and actual production tests, Sutton, Steele & Steele, Inc., Dallas announces full plant production of a new model specific gravity separator to be sold under the name—Whippet V-80 Separator.

The new machine represents a distinct departure from overall size and general shape of preceding Sutton equipment, although the basic air-flotation operating principle has been retained.

Designed originally for small lot work in connection with research and testing phases of processing operations, the Whippet is also being used simultaneously in conjunction with heavier Sutton equipment to pro-

# Pacquins . . .

**famous for**

**smoothing skin . . .**

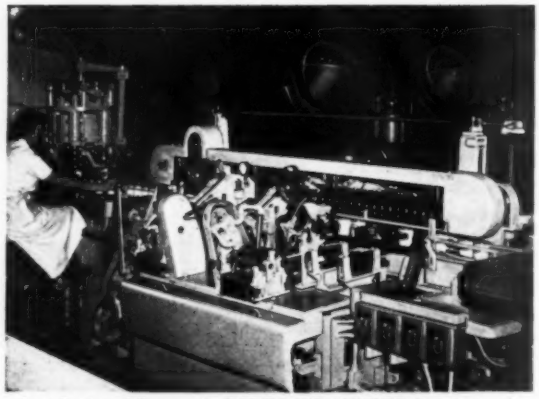
## use PNEUMATIC . . . famous for smoother labeling

"Smooth as silk" could describe the way milady's skin feels, after using PACQUINS . . . or the way Pneumatic filling and labeling machines do their job in PACQUINS model plant.

A glance at the PACQUIN containers will tell you . . . this is no easy labeling job. It calls for precision of the highest order — the kind of precision that Pneumatic equipment can *always* be depended on to give, day in and day out, at top speeds.

Built according to the highest engineering and manufacturing standards in the field, Pneumatic machines operate with money saving efficiency, handling a great variety of world famous products. If you, too, are looking for "lower cost per container" . . . better look Pneumatic's way.

PNEUMATIC SCALE CORP., LTD., 70 Newport Avenue, Quincy 71, Massachusetts. *Also: New York; Chicago; San Francisco; Los Angeles; Seattle; Leeds; England.*



*Installation of Pneumatic DIREC-TRANSFER Labelers and Rotary Cappers in Pacquins plant at Glen Rock, New Jersey.*

**PNEUMATIC**

**PACKAGING AND BOTTLING MACHINERY**

vide continuous de-stoning and retreating of light end or middling products.

The compact, lightweight machine does not require lagging to the floor and, weighing less than 100 pounds, can be lifted and moved about easily. Measuring only 22 x 25½ inches, it requires minimum plant space.

The new Whippet's outstanding design feature is a "delta" shaped deck and body which, in addition to a counter-balanced eccentric mechanism, assures long-wear stability. This unique design also increases culling capacity on lightweight products. Other innovations include a self-contained air intake and distribution system, and centralized fingertip controls for convenience in making operating adjustments.

Costing approximately 40 per cent less and requiring less power to operate than regular air-flotation type separating equipment, the Whippet Model V-80 Separator is believed to have many practical applications heretofore considered prohibitive due to cost, weight, and space factors.

Illustrated literature, prices, and specific engineering and operating data are available from Sutton, Steele, and Steele, Inc., 1031 South Haskell, Dallas, Texas.

### Adjustable Base Forks

Adjustable base forks for handling pallets of various widths have been introduced by The RAYMOND CORPORATION of Greene, N. Y., as optional equipment for its line of straddle-type electric tiering trucks.

The new adjustable forks permit RAYMOND Trucks to handle pallets varying in width from 32" to 48". Made of rugged welded steel sections, the forks are hinged to the main frame and adjusted manually by a screw arrangement. They are being offered with all straddle-type RAYMOND trucks of 2,000 or 3,000 b. capacity having standard load wheels.

Additional details on the new adjustable base forks may be secured by writing direct to The RAYMOND CORPORATION, 14199 Madison Street, Greene, N. Y.

### Automatic, Continuous Feed Regulating Weigher for Fine Materials

The Sintering Machinery Corporation, Transportometer Division, Netcong, N. J., has designed a new feed regulating Transportoweigher for automatically and continuously transporting, weighing and maintaining pre-set rate of feed of any finely divided material in the chemical and processing industries, smelting and refining, mining, food, feed and grain processing, fertilizer and other industries requiring continuous weighing and feed regulating of fine materials.

The weight integrator, mounted in the dust tight cabinet, is a completely mechanical, gear differential type; the speed of one side varying as the conveyor belt speed, the other side varying as the momentary weight on the suspended idlers. The output shaft is geared directly to the direct reading tonnage totalizer. Unlike other types of continuous weighing equipment, there is no inherent error in the integrator, and pneumatic and electrical connections are not necessary for its operation.

The scale suspension is of the free floating type, restrained from response to longitudinal and lateral type movement by simple check links attached to the frame.

To assure even feeding of the belt and to eliminate the effect of "skirt board drag" against the suspended weighing idler, the material is fed on the belt through two totally enclosed helix screw conveyors mounted one above the other on the frame over the belt. The ground phosphate is loaded by means of an appropriate chute or hopper into the top conveyor operating at 12-36 r.p.m., depending on the pre-set feed rate. The material then passes into the bottom conveyor, operating at three times the speed of the top conveyor, thereby assuring a steady, even feed to the weighing belt. The two conveyors are driven by a variable speed drive with integrally mounted pilot motor with an adjustable speed ratio of 3:1. The 24" rubber covered belt is roller chain driven at 120-360 r.p.m. by a ¾ hp. totally enclosed motor.

Transportometer equipment weigh, totalize and regulate the feed with an accuracy of 99½ per cent or better, regardless of belt speed or tonnage variations. Transportometer units are available for a wide range of applications of continuous, automatic weighing, totalizing, transporting and feed regulation for installation on new or existing belt conveyors, and between conveyors and processing equipment.

### Shipping Scale Conveyor Line

In order to avoid extra handling of out-bound cartons before shipment, it is an easy matter to integrate a scale into the conveyor line which leads from production or storage to shipping. Lamson Corporation, Syracuse, N.Y. recently made an installation in a gum factory.

With no waste motion or detours, cartons of gum now move down the roller gravity conveyor line and arrive at the scale section where they are checked for proper shipping weight. After the weight has been verified the cartons move on down the line to be shipped.

This basic principle of including the scale within the conveyor system can be adapted to many types of products and many fields. Ingenious applications of conveyor equipment such as this are characteristic of present day materials handling.

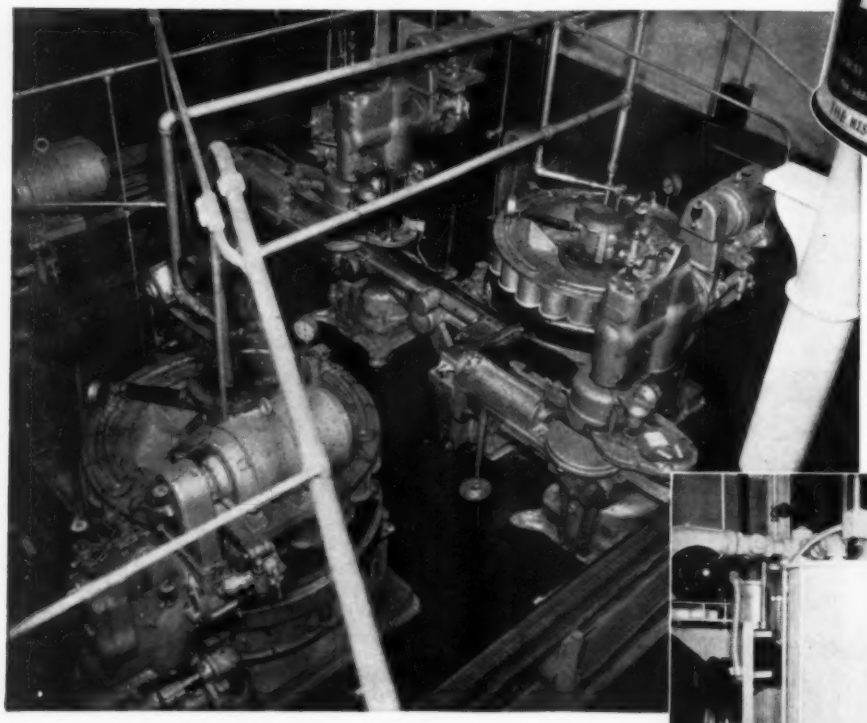
### Chemical Feed System

A new compactly-designed "packaged" chemical feed system is now available from the Milton Roy Company, 1389 East Mermaid Lane, Philadelphia 18, Pennsylvania.

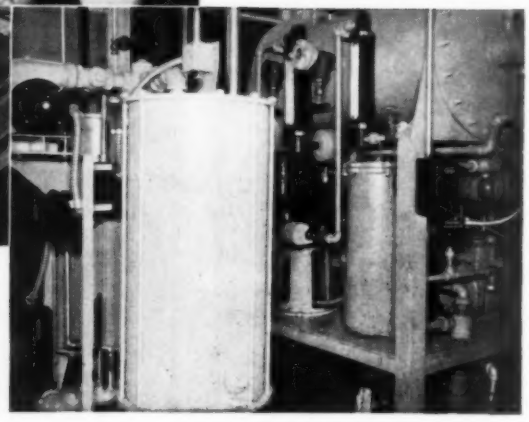
The package unitizes the basic elements of a chemical feed system, reducing field piping and offering considerable savings in installation time and space.

The unit consists of a 50-to-500-gallon carbon steel chemical solution tank mounted over a Milton Roy

# Packaged under a DRY inert gas to preserve its freshness



These packaging machines fill the cans with powdered milk, pull a vacuum on them, flood the contents with DRY gas and then seal the cans.



Gas produced in the generator to the right passes through this Lectrodryer on its way to the packaging machines.

The Nestlé Company, Inc. makes certain their powdered milk products reach users unharmed by exposure to oxygen. Not only do they flood the contents of every can with an inert gas, but they also DRY that gas, so oxygen cannot originate from that source.

The Type BAC Lectrodryer* shown above dries the gas as it comes from the generator, at the rate of 200 cubic feet per hour. The operation is continuous, since one column is reactivated while the other is on-stream, this cycle being reversed at regular intervals.

Many food, candy, pharmaceutical and chemical processing plants are holding entire working areas at low dewpoints with Lectrodryers—drying and hardening tunnels, hand and machine wrapping and packaging rooms, and the like. Work proceeds at full speed day after day, regardless of outside weather conditions.

May we show you how Lectrodryers will make your operations independent of seasonal humidity? Write Pittsburgh Lectrodryer Corporation, 309 32nd Street, Pittsburgh 30, Pennsylvania.

In England: Birlec, Limited, Tyburn Road, Erdington, Birmingham.
In France: Stein et Roubaix, 24 Rue Erlanger, Paris XVI.
In Belgium: S. A. Belge Stein et Roubaix, 320 Rue du Moulin, Bressoux-Liege.

LECTRODRYERS DRY WITH ACTIVATED ALUMINAS

**LECTRODRYER**

*REGISTERED TRADEMARK U.S. PAT. OFF.

Controlled Volume Pump. Piping is supplied for the suction line, complete with valves and sight gauge for reading liquid level. Accessory equipment, including agitators, dissolving baskets, low-level alarm panel, electrodes and relays, etc., can also be supplied.

The Milton Roy Controlled Volume Pumps are available in either Simplex or Duplex models, air-powered or motor-driven. They are manufactured in 10 types of metal, all designed for specific chemical services. Pump capacities range up to 300 gph, and operate against pressures up to 5,000 psi.

This "packaged" system offers a simple compactun it for a host of chemical feeding operations throughout industry.

### New Low-Cost Floor Truck

Rockford, Illinois—As a solution to the problem of combining high quality with low cost, the All Steel Welded Truck Company, Rockford, Illinois, has just announced its new Clark heavy-duty Model CB floor truck.

Model CB is made with two complete arc-welded steel frames without any bolts or loose joints, and has rounded corners for safety. The flush-mounted renewable deck is sandwiched between the frames and protected by a minimum of six and as many as eight cross-members per truck.

The smoothly rounded uni-weld stake pockets, of unbreakable mild steel integrally welded into the truck, prevent injury to personnel, cardboard boxes, clothes, paper bags, and anything else subject to damage from sharp-cornered trucks.

The complete line of Model CB Trucks has been designed for extremely low-cost production and is equipped with Clark unbreakable fabricated casters and wheels for a long and profitable life.

Purchasers may choose between tilt and nontilt types; between steel, rubber, composition, oil-resistant, and static-conductive wheels in all sizes; and between Hyatt type straight roller bearings, ball bearings, and tapered roller bearings, with seals if desired.

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## Waxes in Cosmetics

(*Continued from page 179*)

cause the cream to assume a rigid structure which "breaks" on pressure from the fingers. This is particularly true in hot pour creams.

Ozokerite is the first example of a micro crystalline wax to be used in cosmetics. It has an extremely high melting point, about 73° C., but remains relatively plastic. Its use in a cream increases the apparent melting point but still causes the cream to seem soft to the touch.

There are a great variety of other micro crystalline hydrocarbons now available where this function is exaggerated. They are used in much the same manner as is the Ozokerite and have a tendency to greatly increase the viscosity of the product while still allowing it to flow. There substances introduce an anti thixotropic effect.

We cannot go into a discussion of waxes without the inclusion of lanolin, since it is a true wax, despite its semi liquid appearance. Lanolin has a number of useful functions. It is the first of the water-in-oil emulsifiers used in cosmetics and retains its usefulness in this direction even when incorporated in oil-in-water systems, since when judiciously used it prevents a break from taking place as the emulsion film dries and the water suddenly leaves the emulsion during application. It is such a complicated mixture of different entities it serves as a good common solvent, since it is more capable than most substances to effect the solution of two otherwise immiscible substances. This function is particularly noticeable in anhydrous preparations. In addition it is possessed of an unctuous property not easily duplicated by other substances.

Lanolin consists of esters of straight chain and cyclic alcohols, the cyclic alcohols being various of the sterols, chiefly cholesterol. The propensity it has towards water absorption stems chiefly from the presence of the sterol esters. It is used, probably in a great number of cosmetic products than any other single raw material. The public still regards it as a paragon of dermal excellence and it is easily understandable why it is used in shampoos as an extreme example and in practically everything else from creams to lipsticks not excluding face powder.

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## The Neutralizer in Cold Waving

(*Continued from page 183*)

termination of cysteine by the formation of a color complex prior to hydrolysis of the keratin. The procedure has not been published, but I would be happy to supply it to anyone who cares to write me for it.

The first figure (Table I) describes a conventional thioglycolate cold wave. The wrapped tress was thoroughly wet with the waving lotion, and the processing time was set at twenty minutes. During this time we see that the 20 per cent index dropped steadily, and the sulfhydryl content of the hair rose steadily. At the end of twenty minutes the tress was towel blotted and then saturated with a 1N solution of sodium bromate. We are now rebuilding the Group Two forces. We see that the SH content falls away sharply, and the 20 per cent index rises.

(*Continued on page 253*)

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Wyandotte CHEMICALS

# Advancing Therapy

## Cortisone and ACTH in Rheumatic Fever

Cortisone or corticotropin (ACTH) therapy, say J. J. Bunim, A. G. Kuttner, J. S. Baldwin and C. McEwen (*J.A.M.A* 150:1273, 1952) produces striking and prompt clinical improvement in the extracardiac manifestations of acute rheumatic fever, such as polyarthritis, fever, tachycardia, "toxicity," anorexia, and anemia. In some cases the hormone may be life saving. The abnormal laboratory features, such as elevated erythrocyte sedimentation rate, plasma fibrinogen level, total serum globulin level, and gamma globulin level and the presence of C-creative protein are restored or tend to be restored to normal within a few weeks. The effects on the cardiac manifestations are more difficult to evaluate. Pericarditis with or without effusion subsides, as a rule, during the first week of hormone administration; this may, however, occur spontaneously. It is often possible to control congestive heart failure due to acute carditis with cortisone, provided salt intake is limited. Gallop rhythm frequently disappears, the quality of heart sounds improves, and the heart rate diminishes. In the vast majority of cases, organic murmurs, even of recent origin, persist despite adequate hormone therapy. Rarely is an enlarged heart restored to normal size. Rheumatic activity persists in about 50 per cent of the patients after cortisone or corticotropin is withdrawn. At the present state of knowledge it is not known whether administration of adrenal cortical hormones results in the prevention or even significant diminution of damage to cardiac structures. It is clear that old, inactive morphological changes resulting from rheumatic heart disease, such as valvular deformities and cardiac hypertrophy, are not reversed by hormone therapy.

As in rheumatic fever, corticotropin or cortisone suppresses both the systemic and articular manifestations in almost all cases of juvenile rheumatoid arthritis. When administration of the hormones is discontinued, relapses usually follow, unless a spontaneous remission of the disease has occurred. Often exacerbations may develop while the patient is on maintenance therapy. Increase in dosage is required to control such relapses. In some cases, the pathological processes of disease may advance, even while the clinical manifestations are suppressed.

Bunim and his colleagues conclude that adrenal cortical hormones are of definite value in properly selected cases. They are indicated especially in severe, rapidly progressing forms of disease in which systemic involvement is severe or in which the patient is threatened with serious disability, invalidism, or death.

## Treatment of Pulpless Teeth

As a result of the interest stimulated by the use of penicillin in the treatment of infected pulpless teeth, several investigations have been made on the use of other antibiotics and antibacterial agents in root canal therapy. Thus, the effectiveness of various antibiotics and combinations of antibiotics and fungicides in root canal infections has been determined in eight different studies made by I. B. Bender and S. Seltzer (*J. Am. Dent. Assoc.* 45:293, 1952). They found that the most effective treatment was the use of a combination of procaine penicillin G, streptomycin, chloramphenicol and sodium caprylate. This combination yielded a negative culture in 97 per cent of the cases after an average of 1.1 treatments.

The mixture of antibiotics and fungicide was prepared as follows: 200 mg. each of streptomycin (chloride), chloramphenicol (Chloromycetin) and sodium caprylate were placed in a sterile mortar. These powders were well triturated for 10 to 15 minutes. To this was added a commercially available 1 cc. aqueous suspension of 300,000 units of procaine penicillin G. The entire mass was again triturated for five minutes with a sterile pestle until a homogeneous mass was obtained. The suspension was then transferred with a small sterile spatula to a discharged procaine carpule from which one of the rubber plungers had been removed. The paste was tapped or vibrated into the carpule. The rubber plunger was then replaced and the carpule was inserted into a standard procaine syringe. This combination of antibiotics and fungicide has been proved to be stable and effective for at least one year at room temperature without too much loss in potency. These drugs are also nonirritating to the periapical tissue.

Of related interest is study reported in the *Journal of the Canadian Dental Association* (18:181, 1952) in which a number of antibotics were tested *in vitro* for their effectiveness against the gram-negative, gram-positive, and yeast microorganisms usually found in root canals. As a result of this experimentation a paste was prepared containing 1,000,000 units of potassium penicillin G, 1 Gm. dihydrostreptomycin, 1 Gm. sodium caprylate and 3.0 DC 200 silicone fluid, 3-20 centistokes. The author stated that this paste was effective against all of the organisms likely to be encountered in a root canal and that it was more effective than any such paste previously prepared. In most cases one treatment was effective. A treatment consisted of filling the canal with the paste and sealing the cavity with temporary stopping and then with base plate gutta percha or with cement.

## New Synthetic Estrogen

A clinical assay of a new synthetic estrogen, the methoxy derivative of dimethylpentanoic acid, has been made by M. I. Sturnick and S. L. Gargill (*New England J. Med.* 247:829, 1952). Called Vallestril, the estrogen was administered orally to 28 women with severe menopausal symptoms, 1 young woman with acne vulgaris, 3 women with postmenopausal osteoporosis and 1 elderly man with prostatic cancer with osseous metastases. Twelve of the menopausal women had an excellent result, 8 showed a good response, 5 had fair improvement, and 3 had no relief. The drug was effective in all cases of post-menopausal osteoporosis and did not produce uterine bleeding.

It was effective in the male patient with prostatic carcinoma without the development of gynecomastia, which had been troublesome while he was taking stilbestrol.

Most of the patients responded to

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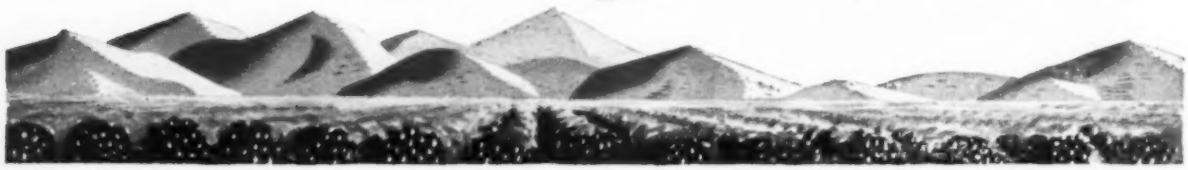

daily doses of 4.5 or 6.0 mg. within three or four days of the initiation of therapy. One patient became nauseated while taking 7.5 mg. daily. No other evidence of toxicity or withdrawal bleeding was encountered. The compound produced vaginal cornification, but no consistent correlations were observed between dosage and degree of cornification or clinical improvement and cornification of the vaginal epithelium. No alteration in the uptake of radioactive iodine by the thyroid gland was observed in 2 patients who had taken therapeutically effective doses of Vallestril for several weeks.

The drug compared favorably with other estrogens and seemed superior to most by virtue of its lack of side effects, particularly production of uterine bleeding.

### Magnamycin

The antimicrobial spectrum and certain biological characteristics of Magnamycin (Carbomycin), a new antibiotic, have been presented by A. R. English, M. F. Field, S. R. Szedny, N. J. Tagliani and R. A. Fitts (*Antibiot. & Chemother.* 2:678, 1952). Their studies have been summarized as follows: 1. Magnamycin is primarily effective against gram-positive microorganisms, including the saprophytic mycobacteria. Little activity was demonstrated against eight gram-negative microorganisms, although, it was extremely active against *N. catarrhalis*. Little activity was demonstrated against *C. albicans*. 2. The activity of Magnamycin was not appreciably altered when tested in the presence of 1 to 20 per cent concentrations of human serum or in four different laboratory media. 3. Magnamycin is primarily a bacteriostatic agent, although at certain concentrations a bactericidal activity is apparent. 4. The resistance pattern shown by Magnamycin is comparable to that of penicillin, i.e., resistance is gained slowly by step-wise increments and is in contrast to the streptomycin pattern. 5. From a study of 35 cultures from resistant clinical cases, it was evident that if cross resistance does occur between Magnamycin and any of the seven commercially available antibiotics, it does not occur to a high degree. Only one culture required as much as 6.25 mcg./ml. of Magnamycin for inhibition; six were inhibited by 3.12; 16, by 1.56; 11, by 0.78, and one, by 0.39 mcg./ml. In addition, preliminary studies on two antibiotic-resistant cultures isolated from fatal cases of staphylococcal dysentery showed them to be sensitive to 1.56 and 0.79 mcg./ml. *in vitro*, respectively, of Magnamycin. 6. Magnamycin was more active *in vitro* against the *enterococci* than was penicillin or dihydrostreptomycin. It compared favorably with terramycin against these cultures. Magnamycin was less active against the *Bacillus* species and *M. pyogenes* var. *aureus* strains than was penicillin, terramycin, or dihydrostreptomycin. However, the range here (0.078 to 1.25 mcg./ml.) is still well within detected serum concentrations.

### Fat Emulsion Administration

It is pointed out by E. M. Goldberg, I. F. Stein, Jr. and K. G. Meyer (*J.A.M.A.* 150:1665, 1952) that many patients who require surgery and have obstructing lesions of the mouth, esophagus, and stomach can consume only a liquid diet. These patients often enter a charity hospital weeks or months after the onset of symptoms. As a result, severe malnutrition is usually present, which greatly intensifies the risk of performing an extensive surgical procedure, such as esophagectomy or total gastrectomy. The restoration or maintenance of body weight, positive nitrogen balance, and an adequate caloric, mineral, and vitamin intake while restricted to a liquid diet has been achieved only with difficulty in the past. Recent work has indicated that fat emulsions can be used as the major source of calories in a liquid diet.

To determine the usefulness of such a preparation, 90 patients who required prolonged liquid feeding owing to obstructive lesions of the mouth, esophagus, or stomach were selected for study. All of these patients had some degree of weight loss preceding the study. All patients received a high caloric liquid feeding, consisting primarily of a 40 per cent emulsion of peanut oil. This emulsion supplies four calories per milliliter. The feedings either supplemented a ward liquid diet or consisted of a complete diet of fat emulsion in combination with a protein concentrate.

It was found that the administration of 400 Gm. of fat per day in the upper gastrointestinal tract is usually tolerated and is almost completely absorbed. A marked increase in weight occurred in patients with benign obstructing disease of the upper gastrointestinal tract and with malignancy of the mouth. Beneficial results were also noted in some patients with malignant obstructing lesions of the gastrointestinal tract. Little, if any, improvement occurred in patients with far advanced malignant disease. Nausea, vomiting, diarrhea, or constipation occurred in approximately 50 per cent of the cases. The symptoms were often mild and transitory and usually did not require cessation of the therapy.

### Repository Penicillin Preparations

In their report in the *New England Journal of Medicine* (247:807, 1952), M. E. Grigsby, T. H. Haight and M. Finland state that the hydriodide of diethylaminoethyl ester of penicillin G (Neo-Penil) in aqueous suspension is a repository preparation of penicillin. Significant concentrations of penicillin appear in sputum and other body fluids after intramuscular injection of Neo-Penil. The concentrations of penicillin in sputum and the ratio of these concentrations to those found in the plasma are higher after Neo-Penil than after similar amounts of aqueous suspensions of procaine penicillin or solutions of potassium penicillin G. Clinical and bacteriologic effects of Neo-Penil therapy in a small number of patients with acute pneumonia and chronic bronchopulmonary infections were favorable. Although these data are insufficient to indicate any superiority of Neo-Penil over procaine penicillin or the soluble salts of penicillin G, the higher concentrations of penicillin in sputum during Neo-Penil therapy and the fact that intramuscular injections of Neo-Penil appear to be better tolerated than other forms of penicillin suggest that it deserves further trial in bronchopulmonary infections due to penicillin-susceptible organisms.

In another publication, G. H. Stollerman and J. H. Rusoff (*J.A.M.A.* 150: 1571, 1952) report that a total of 1,753 injections of a new repository penicillin preparation, N,N′ dibenzylethylenediamine dipenicillin G (Bicillin), was administered to 135 children and 8 adults with rheumatic fever during a 10-month period as prophylaxis against group A streptococcal infection. Following single intramuscular injections, low levels of penicillin were detectable in the serum for unusually long periods. Single injections of Bicillin appeared to be effective in eliminating the Streptococcus carrier state in most cases. In two patients urticarial reactions developed that persisted for only 72 hours. Local reactions were somewhat severer than those due to injections of penicillin G or procaine penicillin. On the basis of these findings Stollerman and Rusoff feel that Bicillin merits further trial as a "long - acting" prophylactic agent against rheumatic fever.

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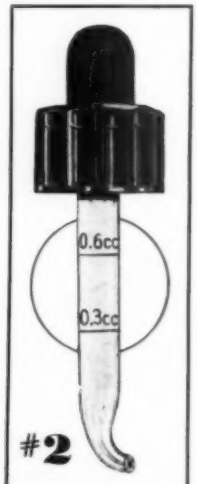


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# Compounder's Corner

## Sulfamate Antiperspirant

According to a note in *Soap, Perfumery & Cosmetics* (25:736, 1952), British patent 663,426, granted to Colgate, Palmolive Peet Co., is concerned with an antiperspirant preparation claimed to be less harmful to clothing fabrics than preparations containing an aluminum salt of a strong inorganic acid as the effective ingredient. It comprises a fatty substance emulsified with an aqueous phase and includes, as the effective antiperspirant ingredient, the aluminum salt of sulfamic acid, referred to as aluminum sulfamate. This has been found to be a very effective perspiration retardant, superior to aluminum sulfate. Aluminum sulfamate is practically non-softening to clothing fabrics. Under certain conditions, however, aluminum sulfamate may cause some discoloration of cellulosic fibres. To overcome this, without impairing the efficiency of the aluminum sulfamate as an antiperspirant, it is suggested to incorporate in the preparation certain organic compounds in sufficient concentrations. The organic compounds suggested for use are: thiourea, urea, formamide, thioglycollic acid and others. Such preparations are claimed to be very effective and to exert no discoloring action on textile fabrics.

As a specific example the preparation may consist of:

| | |
|---|---|
| **Acid-stabilized glyceryl monstearate** | **16.0 parts** |
| **Spermaceti** | **5.0 "** |
| **Sodium lauryl sulfate** | **1.5 "** |
| **Titanium dioxide** | **0.5 part** |
| **Aluminum sulfamate** | **18.0 parts** |
| **Urea** | **5.0 "** |
| **Water** | **54.0 "** |

## Anti-Sunburn Preparations

Following a discussion of the damage to the skin produced by repeated overexposure to sunlight and the mechanism by which the noxious effects are inflicted, C. D. Bell and W. F. Mazzone (*U. S. Armed Forces Med. J.* 3:1225, 1952) described methods by which these effects could be prevented. By exposing subjects to erythema doses of ultraviolet light, having small areas protected with the sodium salt of para-aminobenzoic acid (NaPABA) homomethyl salicylate, menthyl anthranilate, and tannic acid and salol, it was determined that NaPABA gave protection superior to that provided by the other agents. By exposing subjects partially protected by different percentages of NaPABA in different combinations of alcohol and water to the therapeutic lamp, it was determined that five per cent NaPABA in equal parts of alcohol and water gave the maximum protection. Polyoxyethylene sorbitan monoleate (Tween 80) was added to the formula to permit easy spreading, even on naturally oily skin, and to insure penetration into wrinkles and follicles, making certain of an unbroken film over the selected area. The following lotion to be applied prior to exposure is recommended:

| | |
|---|---|
| **NaPABA** | **5 Gm.** |
| **Polyoxyethylene sorbitan monooleate** | **2 Gm.** |
| **Water and alcohol in equal parts, to make** | **100 cc.** |

The lotion dries quickly, leaving no telltale evidence of its presence. It causes a tan discoloration of cotton or woolen clothing, removable by cleaning, but may permanently discolor rayon or nylon. Being water-soluble, it loses its protective ability after about three hours of average sweating.

It is pointed out that just as men prefer a liquid preparation, women readily accept a non-greasy ointment because it can be employed as a cosmetic base. The following ointment to be applied prior to exposure is recommended:

| | |
|---|---|
| **NaPABA** | **5.0 Gm.** |
| **Cetyl alcohol** | **15.0 Gm.** |
| **Cera alba** | **1.0 Gm.** |
| **Propylene glycol** | **10.0 cc.** |
| **Sodium lauryl sulfate** | **2.0 Gm.** |
| **Propylene glycol** | **10.0 cc.** |
| **Water** | **72.0 cc.** |

No perfume should be added to either the lotion or the ointment because of the photosensitizing effect of oil of bergamot, present in most perfumes and colognes.

## Japanese Patents on Chlorophyll

A series of Japanese patents describing the preparation of chlorophyll and chlorophyll derivatives are cited in the November 10 and 25, 1952, issues of *Chemical Abstracts*. Thus, Japanese patent 2673 ('50), granted to T. Koriyama, gives the following procedure for the preparation of chlorophyllin and carotinoid from green plant leaves: 100 Gm. of air-dried powdered leaves are extracted with 75 per cent acetone or 75 per cent alcohol at room temperature, filtered, and two-thirds the volume of one per cent sodium chloride solution is added to the filtrate. The filtrate is allowed to stand in the dark for two days at 0°C, filtered, and the precipitate on the filter is extracted with 250 cc. of petroleum ether. The extract is placed in a separatory funnel, and 50 to 60 cc. of Normal sodium hydroxide and 300 cc. of alcohol are added. After shaking, the upper yellow layer gives the carotinoid after removing the solvent under carbon dioxide. The lower green caustic soda layer is treated with 40 to 42 cc. of *N* hydrochloric acid, allowed to stand overnight at 0°. The salt is removed, and the solution is evaporated to dryness at low temperature to give chlorophyllin. The yield from dried pumpkin leaves was three per cent chlorophyllin and 40 to 50 per cent carotinoid.

In Japanese patent 2688 ('50) H. Mimura employs the following method for making zinc chlorophyllinate: 100 Gm. of chlorophyll are mixed with 200 Gm. of pure zinc oxide and refluxed with 200 cc. of 80 per cent alcohol for one hour at 60 to 80°C. The precipitate, which is filtered and washed several times with absolute alcohol, gives zinc chlorophyllinate, which is more stable than chlorophyll and more suitable for use in an ointment.

In the procedure described by Y. Fujimaki and M. Ogawa in Japanese patent 3371 ('50), the chlorophyll in dried leaves is extracted with alcohol, methanol or acetone. Neutral oil is added to absorb the chlorophyll in the solvent and the solvent is separated and recycled. Another method developed by M. Takahashi and given in Japanese patent 540 ('51) also provides for the

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extraction of oil-soluble chlorophyll derivatives. In this process, boiled or frozen green leaves are dried, powdered and immersed in one or more of such materials as lanolin, turtle oil, olive oil, and tsubaki seed oil, which contains absolute alcohol or dry acetone or both and an organic acid. After 30 minutes at room temperature, the mixture is filtered, the solvent removed from the filtrate and the residue treated with an alcoholic solution of the acetate or sulfate of copper, iron or zinc. This is boiled for five minutes, shaken with warm water to remove the salts and remaining solvent, and filtered through a magnesium carbonate layer. In Japanese patent 539 ('51), granted to T. Hidaka, chlorophyll is obtained by extracting dried, green leaves with liquid ammonia; the ammonia is removed, and the residue is extracted with organic solvents.

The preparation of a water-soluble derivative of chlorophyll is described by T. Ito and T. Inoue in Japanese patent 538 ('51). In their method chlorophyll, mixed with dilute alcohol containing sodium carbonate, is heated to boiling and allowed to stand for a long time. The insoluble substances are removed, as is the alcohol in the solution. The residue is dissolved in absolute alcohol and pured into acetone to precipitate a water-soluble Chlorophyll derivative.

## CMC-Glycerine Ointment Base

In investigations to find the best formula containing carboxymethylcellulose (CMC), glycerine and water to provide a satisfactory ointment base, O. N. Yalcindag (*Am. J. Pharm.* 124:386, 1952) observed that the following combination yielded the best preparation:

| | |
|---|---|
| **CMC, high viscosity type** | **2 Gm.** |
| **Water, distilled** | **18 Gm.** |
| **Glycerine (Sp. gr. 1.26)** | **80 Gm.** |

Mix about 20 per cent of the glycerine with the CMC in a mortar, add some water, mix well, and add the rest of the water, mixing slowly. Let stand for a few hours and then mix with the balance of the glycerine.

This yields a homogeneous, odorless product with a soft petrolatum-like consistency. It absorbs 6.79 per cent of water vapor in 26 days if exposed to air. However, after such water absorption it does not lose its consistency. At —5°C it does not lose its consistency, but at 50° it softens somewhat. The new CMC-glycerine base is stable; showing no decomposition when examined six months after preparation. This base has been substituted for the bases of a number of ointments and no changes were noted in preparations made with a variety of dermatologic medicaments. This new base is not harmful to the skin, is washable and has a desirable pH. Ointments made with it are soft, easily spread, and readily compounded with other substances.

## Isotonic Ephedrine Nose Drops

The value and limitations of nose drops containing nasal vasoconstrictors or decongestants is discussed in Bulletin 9 (1952) issued by the Bureau of Professional Relations of the Florida College of Pharmacy. The following formula, Ephedrine Isotonic Solution, F.F., is given as an example of an effective nasal decongestant that may be used as a nasal spray or drops:

| | |
|---|---|
| **Ephedrine hydrochloride** | **0.60 Gm.** |
| **Chlorobutanol** | **0.30 Gm.** |
| **Menthol** | **0.06 Gm.** |
| **Alcohol** | **1.00 cc.** |
| **Dextrose** | **2.00 Gm.** |
| **Water distilled, to make** | **60.00 cc.** |

## Sunscreen Index

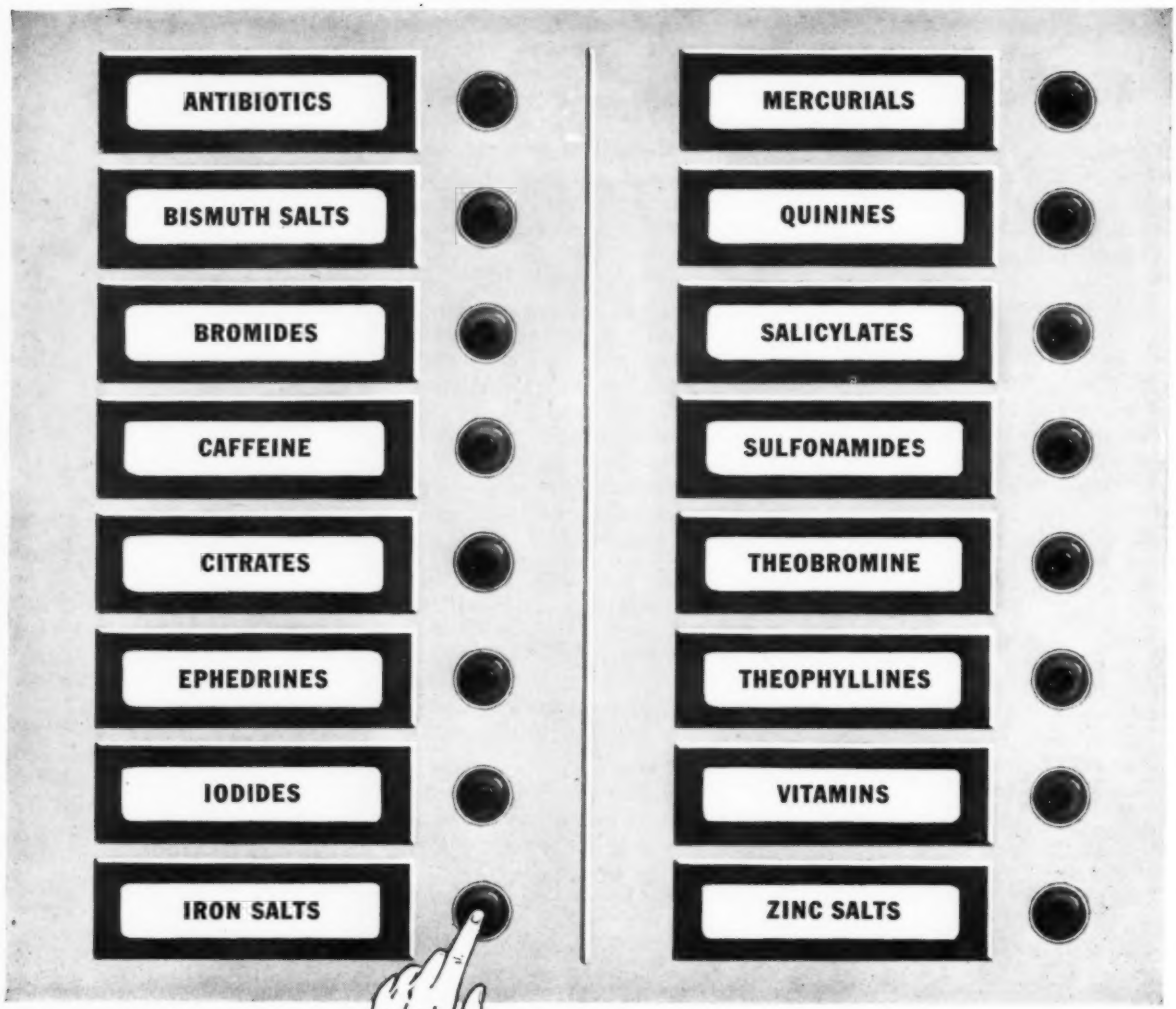
A simple and rapid method of evaluating the relative screening action of sunscreen compounds has been developed by W. D. Kumler (*J. Am. Pharm. Assoc.*, Scient. Ed. 41:493, 1952). In his procedure the optical density of a 0.1 per cent solution in a 0.1-mm. fused silica cell is measured at 3,080 Angstroms, the peak of the "Sunburn Curve." The optical density is divided by the per cent concentration, thus reducing all values to those given by a 1 per cent solution. These values are termed the sunscreen index (S.I.) of the compounds. Values of the sunscreen index of 45 compounds, as determined by this method, are given in the following table:

| Compound | Sunscreen Index (S. I.) Optical Density at 3,080 A. Conc., % |
|---|---|
| Ethyl *p*-dimethylaminobenzoate | 14.8 |
| Ethyl *p*-aminobenzoate | 9.6 |
| Isobutyl *p*-aminobenzoate | 9.2 |
| Propyl *p*-aminobenzoate | 9.0 |
| *n*-Butyl *p*-aminobenzoate | 8.0 |
| β-Methyl umbelliferone | 7.7 |
| *p*-aminobenzoic acid | 7.4 |
| Dehydracetic acid | 7.0 |
| 3-Carbethoxycoumarin | 6.6 |
| Benzilidine camphor | 6.6 |
| Heliotropine | 6.5 |
| Umbelliferone acetic acid | 6.0 |
| Salicylic acid | 4.3 |
| Sodium *p*-aminosalicylate | 4.3 |
| Methyl salicylate | 4.0 |
| Salicylamide | 3.9 |
| Methylenedisalicylic acid | 3.0 |
| 3-Carboxycoumarin | 3.0 |
| Thiosalicylic acid | 2.7 |
| Brightener W/450 | 2.7 |
| *p*-Hydroxyanthranilic acid | 2.6 |
| Sodium salicylate | 2.4 |
| Digalloyltrioleate | 2.3 |
| α-Resorcylic acid | 2.2 |
| Salicylaldehyde | 2.2 |
| *p*-Aminosalicylic acid | 1.9 |
| Dipropyleneglycol salicylate | 1.9 |
| Pyribenzamine | 1.8 |
| Pyrianisamine maleate | 1.7 |
| Sodium gentisate | 1.7 |
| Fluorescent white | 1.6 |
| Ethanolamide of gentisic acid | 1.5 |
| Ethyl gallate | 1.4 |
| Sodium sulfadiazine | 1.2 |
| Ethyl vanillate | 1.1 |
| Sodium sulfapyridine | 0.95 |
| Lauryl gallate | 0.85 |
| Totaquine | 0.80 |
| Barbituric acid | 0.19 |
| Chlorophyll | 0.15 |
| Amberlite IR-4-B | 0.15 |
| Salicyl alcohol | 0.05 |
| Anisic acid | 0.01 |
| Uvitex RBS | 0.01 |
| Uvitex RS | 0.005 |

Kumler points out that the "Sunscreen Index" (S. I.) of the compound can be used to calculate the per cent of the compound that should be incorporated to screen out a certain percentage of the sunburn-producing rays under any given set of conditions. For example, the armed forces have set up specifications that a preparation shall not transmit more than one per cent of the rays in the sunburn region through a film 0.001 inch thick. One can calculate what per cent of any one of the above compounds would have to be incorporated in a preparation to give this amount of screening. The figures in the above table are for a cell 0.1 mm. or 0.1/10 X 2.5 = 0.004 inch thick. A transmission of one per cent corresponds to an optical density of 2. Therefore if $x$ is the per cent of the compound that would have to be incorporated for one per cent transmission under these conditions, then

$$x = \frac{2 \times 4}{\text{S. I.}} = \frac{8}{\text{S. I.}}$$

Thus for *n*-butyl p-aminobenzoate, $x$ would be equal to $x = (8/8) = 1$ per cent and for methyl salicylate it would have a value of $x = (8/4) = 2$ per cent. This signifies that a one per cent solution of the former and a two per cent solution of the latter when present in a film 0.001 inch thick would transmit one per cent of the rays in the sunburn region. Since the specifications call for a transmission of less than one per cent, the actual concentration used would have to be higher. Allowing for a safety factor of 100 per cent, the concentration for *n*-butyl-*p*-aminobenzoate should be two per cent and for methyl salicylate four per cent.

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# Patent Thoughts and Trends

*by Thomas Cifelli, Jr.**
PATENT ATTORNEY

## PATENTED COSMETICS AND TOILET PREPARATIONS

From time to time we have abstracted U. S. Patents dealing with various drug and cosmetic subjects and, judging from comments which have been received, these reviews have been of general interest. Accordingly, a review of the U. S. Patents dealing with cosmetics and toilet preparations in general appears to be in order.

Please do not be misled by the title of this review as it will not cover each and every U. S. Patent that has ever been granted on the subjects of cosmetics and toilet preparations. It will, however, deal with all U. S. Patents classified by the Patent Office in Class 167, sub-class 85, except those pertaining to shaving preparations. The latter were reviewed in the June and August, 1949, issues of This Journal.

The review will be divided into two parts, the first one dealing with expired U. S. Patents and the second with unexpired U. S. Patents. Expired patents, as is well known, are those which have run their full legal course of seventeen years from date of issue. After this period a patent no longer represents a legal right but of course stands as part of the prior art and hence can be cited by the Patent Office against any patent application.

### Expired U.S. Patents

U. S. 29,944—Composition for Toilets—issued September 11, 1860, to Sampson American.

A toilet preparation, which is said to give the flesh a beautiful color similar to that of persons having the fairest complexion when in perfect health, is made by mixing oil of turpentine (4 ounces), alkanet-root (½ ounce), alum (2 drams), oil of roses (12 drops), and oil of neroli (6 drops).

U. S. 351,621—Remedy for Excessive Perspiration—issued October 26, 1886, to Julius Valentin Brandau.

A preparation with the imposing name of "Antihidrorrhoidum" is the subject of this patent. It consists of "chlorinated ether, composed of chlorine gas combined with butyric and acetic ethers, in combination with muriatic acid, alcohol, and glycerine".

### WOW!

U. S. 439,101 — Cosmetic — issued October 28, 1890, to Adèle Bossé.

This patent deals with an emollient product obtained by soaking the linseed in water for two days and squeezing the resulting mixture through muslin, yielding an "opaque and translucent" substance. The product is said to be useful in perfumery and for the manufacture of toilet powders, soaps or toilet water.

U. S. 959,605—Stable Composition Containing Hydrogen Peroxide—issued May 31, 1910, to Max Alfred Queisser, Hamburg, Germany, assignor to the firm of Pearson & Co., Hamburg, Germany.

An interesting solution to the problem of stabilizing hydrogen peroxide in creams and tooth paste is given in this patent. A mucilage is made by soaking or steeping a substance such as tragacanth, agar-agar and gum arabic in a solution of hydrogen peroxide. Burnt gypsum is added to the mucilage.

The inventor claims that the water in which the hydrogen peroxide is dissolved combines with the burnt gypsum as water of crystallization and the resulting mass holds mechanically large quantities of the peroxide.

U. S. 1,388,546—Nail-Polish—issued August 23, 1921, to Joseph Brueck.

An easily-concocted nail-polish is the subject of this patent which suggests dissolving gun cotton in acetone and amyl acetate.

U. S. 1,699,922—Toilet Accessory—issued January 22, 1929 to Sarah D. Rothstein.

If you want to smooth the skin or reduce wrinkles, this patent offers a simple solution. Take a sheet of textile fabric and impregnate it with coagulated albumen or albuminous material. Then massage the skin with the resulting dry pad or use the pad as you would an ordinary wash cloth or wash pad, in the latter case applying soaps or creams as desired.

U. S. 1,809,082—Product for Treating the Skin—issued June 9, 1931, to Joseph Urkov and Benjamin R. Harris said Urkov assignor to Epstein & Harris of Chicago, Illinois.

The idea of this patent is to provide a skin-treating composition in the form of a plastic or a paste-like product which readily transforms itself into a continuous rubbery sheet after application. The sheet is then pulled off as a whole or in sections, leaving the skin, it is claimed, clean and free of objectionable residue.

A formula for a suitable composition is given below:

| | |
|---|---|
| High-grade commercial gelatine | 100 gr. |
| Water | 350 gr. |
| Zinc Oxide | 85 gr. |
| Ethylene glycol | 50 cc. |
| Castor oil | 50 cc. |
| Menthol | .75 gr. |
| Perfume—sufficient quantity to give desired result. | |

U. S. 1,869,782—Lip Stick—issued August 2, 1932, to Woldemar M. Sternberg, Assignor of one-half to Epstein & Harris.

Lip sticks which color the lips by reason of an actual staining rather than through a layer of a colored mixture form the subject-matter of this patent.

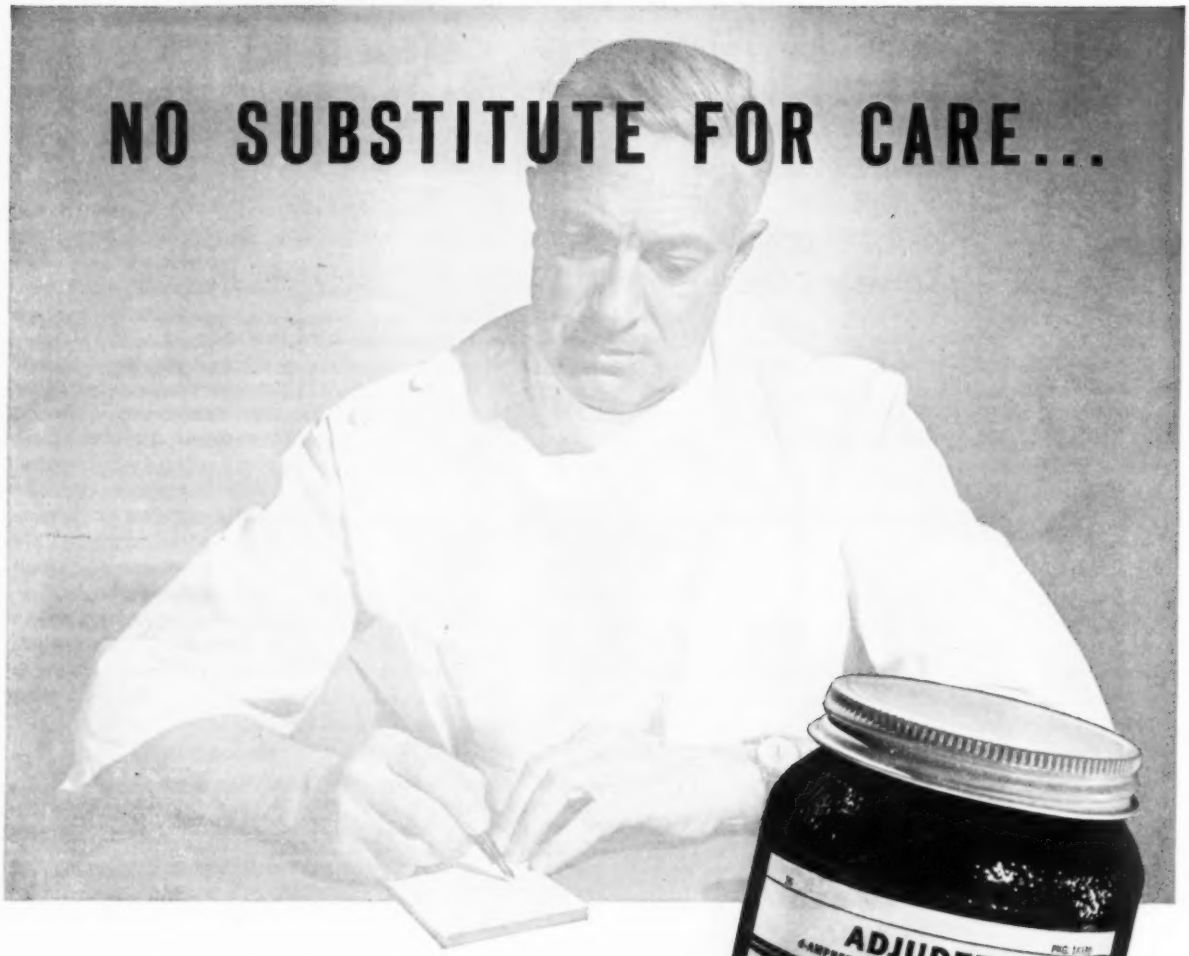
The lip-staining compositions comprise suitable water-soluble dyes mixed with inert materials such as talc and kaolin and waxy or fatty material, the composition being held together by a suitable binder.

A formula which is said to be suitable is given below:

| | |
|---|---|
| Talc | 26.7 per cent |
| Kaolin | 13.3 " " |
| Ponceau 3R | 10.9 " " |
| Amaranth | 6.3 " " |
| Yellow ochre | 17.1 " " |
| Oxide of zinc | 5.7 " " |
| Paraffin | 3.6 " " |
| Beeswax | 5.9 " " |

*Gaylor, Cifelli & Jurick, Newark, N. J.

# NO SUBSTITUTE FOR CARE...



In prescribing for patients, the doctor exercises the utmost care. And those who prepare the drugs he prescribes are just as cautious in making them. This exactness is carried out even in the packaging of the items... as is well illustrated by the Wyeth Laboratories' product, ADJUDETS,* shown here. These troches, designed to curb the appetite and at the same time to supply essential vitamins, are individually wrapped and hermetically sealed in the glass container. The closure used as a seal for this package is a Crown Screw Cap with Slip Rubber Ring.

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| | |
|---|---|
| Carnauba wax | 2.4 per cent |
| Sulphonated oil | 4.7 " " |
| Petrolatum | 3.4 " " |

U. S. 1,878,103—Finger Nail Glossifier—issued September 20, 1932, to Theodore F. Bradley, assignor to Ellis-Foster Company of Montclair, N. J.

High gloss finger nail compositions present a number of problems. This patent outlines the problems and gives a solution.

The qualities which are necessary in finger nail glossifiers are ability to dry in not more than one minute, perfume-responsiveness, clarity and light color, freedom from discoloration, ability to give a high gloss in one or two applications, adhesion, color stability, dye stability, and smoothness of coating.

The key to the solution offered by Bradley is the use of nitrocellulose of a very low viscosity, preferably of a rating less than one-half second and the use of highly volatile solvents, preferably ethyl alcohol.

A formula which is said to give a high gloss finish in one application consists of 22 parts by weight of one-fourth second nitrocellulose and 78 parts by weight of a solvent having the following parts by volume:

| | |
|---|---|
| Anhydrous ethyl alcohol | 56 |
| Anhydrous methyl alcohol | 3 |
| Acetone | 8 |
| Ethyl acetate | 4 |
| Light gasoline distillate | 3 |
| Toluol | 4 |

U. S. 1,878,447—Keratin Enameling Composition — issued September 20, 1932 to Carleton Ellis assignor to Ellis Foster Company.

This patent tackles the same problem to which U. S. 1,878,103 is directed. The key offered by this patent consists in using pure anhydrous methanol as the solvent.

U. S. 1,907,424—Chemical Composition—issued May 9, 1933, to Paul Manning.

According to Manning, the so-called "note" substances contained in perfumes include what may be termed "non-odorous" parts which have the effect of limiting the effectiveness of the note constituent. Manning claims that the full oderiferous effect of the note constituents may be obtained by employing certain fixatives, which in addition to their fixative characteristics also have valuable properties for other purposes. As such fixatives are suggested the chlorides of aluminum, cerium, cerium nitrate, cerium oxalate, and oxalates of related metals, such as lanthanum, neodymium, praseodymium and the like.

This completes the expired group of patents. The unexpired patents in this group will be reviewed in the next article.

## RECENT PATENTS

*2,621,206*—**Ciba—Isomerization of 1-keto - 2 - Alkyl - Octahydrophenathrene-2-Carboxylic-Acid Esters.**

*2,621,208,10*—**Ciba — Hexahydrophenanthrene Carboxylic Acid Esters and Esters.**

*2,622,030-2*—**Washington Labs., Inc. — Bacteriostatic and Fungicidal Compositions for Retarding Deterioration of Foods and Other Organic Matter.**

*2,622,036*—**Wolsey Limited — Hair Waving Agent.**

*2,622,058*—**U. of Ill. Foundation—Ammoniated Dentifrice.**

*2,622,081*—**Am. Cyanamid — Cyclic Ketal Derivatives of Steroids.**

*2,622,086*—**Heyden Pharmacal Co.—Preparation of 1,2,3-Substituted Pyrazolone Derivatives.**

*2,622,100*—**May & Baker Limited—Secondary Octyl Ether of Tri-iodo phenol as an X-Ray Contrast Media.**

*2,622,103,4*—**Glaxo Labs. — Unsaturated Carbinols.**

*2,623,000*—**Ri-trate Corp.—Antihypertension Composition.**

*2,623,043,4*—**Upjohn — 12 and 17 - Bromo Steroid Adducts.**

*2,623,045*—**Endo Products—N - (Substituted-Aminoethyl) 4 - Amino - benzoic Acid Diethylaminoethyl Esters.**

*2,623,046*—**Searle & Co.—Esters of Acridan-10-Carboxylic Acid.**

*2,623,048*—**Parke, Davis—4-Thiazolidones.**

*2,623,051*—**Research Corp. — 21 - Bromo Steroids.**

*2,623,052*—**Upjohn — 3-Substituted-5-Ternorcholenyl Formaldehydes.**

*2,623,054*—**Upjohn — Steroid Aldehydes.**

*2,623,053,5*—**Montclair Research Corp.—Steroids.**

*2,623,060*—**Sharp & Dohme — Alkylidenecyanoacetates.**

*2,623,063*—**Schering — Chemotherapeutic Compounds.**

*2,623,066*—**Ralph L. Evans—Preparation of Beta, Beta-Dithiodicarboxylic Acids and Esters.**

*2,623,839-41*—**Julius Schmid, Inc.—Spermicidal Compositions Fatty Acid esters of Polyoxyethylene glycols.**

*2,623,876*—**Eli Lilly & Co.—Allyl-mercapto-penicillin.**

*2,623,877*—**Monsanto—Sulfa Derivatives of 2-Amino-5-Cycloalkyl-1,3,4-Thiadiazoles.**

*2,623,878*—**Ciba Pharm. Products—2,4-Disubstituted Amino Quinazolines.**

*2,623,880*—**Heinrich Hopf—N-(Beta-N′ Phenyl - N′ - Benzylaminoethyl) Pyrrolidine Anti-histamine agents.**

*2,623,885*—**Ciba Pharm. Products—Cyclopentano - Polyhydro - phenanthrenes.**

*2,623,886*—**Lakeside Labs.—Conversion of Estrones to Estradiols.**

*2,623,907*—**Dow—2,2′ - Alkylidene - Bis(6-Alkyl-4-Chlorophenols) Soap Germicides.**

*2,623,908*—**Dow—Process for Making 4,4′-Isoproplidenediphenol.**

*2,624,730*—**Sterling Drug—6 - Haloaryl-3-Pyridzaones.**

*2,624,731*—**Burroughs Wellcome—5-Phenylpyrimidines.**

*2,624,734-8*—**Hoffmann-La Roche—Piperidines.**

*2,624,739*—**W. S. Merrell Co.—Alpha, Alpha Diaryl Piperidino Methanols.**

*2,624,748*—**Upjohn — Bisnorchola-4, 6-Dien-3-One-22-Al.**

*2,624,763*—**Hoffmann-La Roche — Bis-Quaternary Ammonium Compounds.**

### Court Cases

*U.S. 2,120,667*—**B. Gruskin, Rystan Co., Inc. v. M. P. Angland, filed Sept. 4, 1952, D.C., District of Columbia.**

*2,120,667*—**B. Gruskin—Therapeutic agent for use in the treatment of infection (declaratory judgment), D.C., S.D., N.Y., Bristol-Myers Co. v. Rystan Co., Inc. Dismissed.**

*2,027,967*—**Anthelmintic, Illinois—Meorman Mfg. Co. v. Staley Milling Co. Decree in *favor* of plaintiff.**

*2,471,394*—**R. Gubner, Salicylate and succinate therapeutic preparations filed Sept. 11, 1952, N. Y., Dolcin Corp. v. Hollings Smith Co., Inc.**

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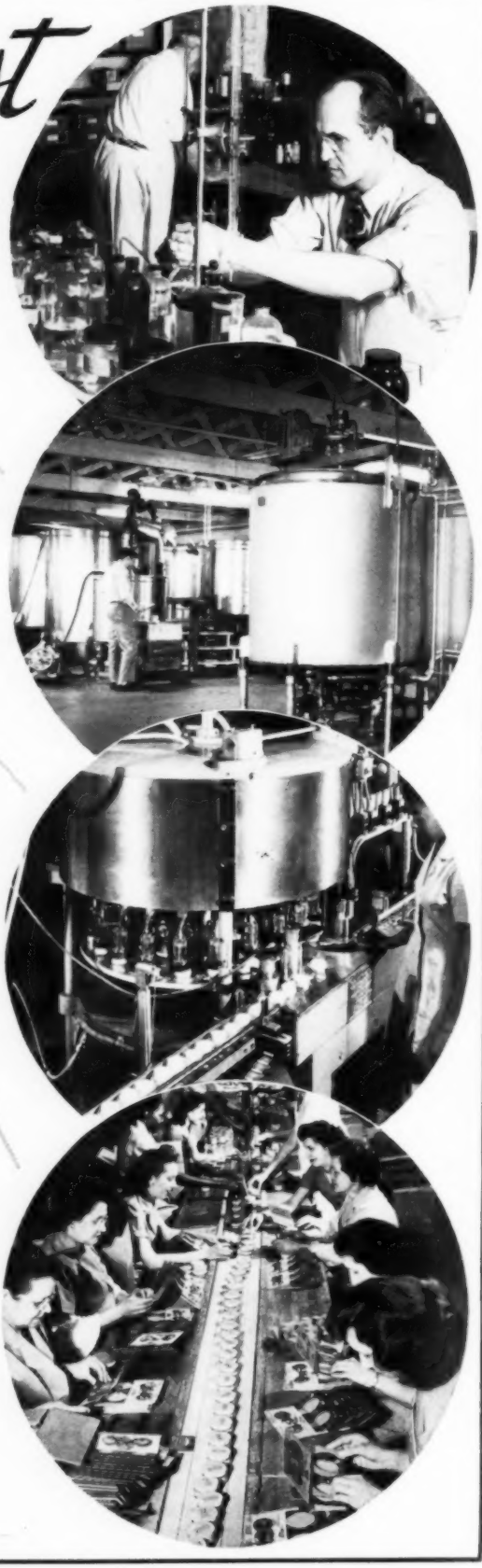
ERRATUM: On page 666 of the November, 1952 issue of This Journal, the number of the Ott patent was given as 611,733. This was incorrect, the correct number being 2,611,773. Any inconvenience which may have resulted from this error is regretted.

# For Lower Cost COSMETIC PRODUCTION



**IN the highly competitive cosmetic merchandising field, it is well for the cosmetic manufacturer-distributor to explore every possible means of reducing costs.**

**For example, what are the facts as to costs, advantages and safeguards in entrusting all or certain parts of your production, warehousing and distribution to a private brand manufacturer?**

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**KOLAR Laboratories, Inc.**

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# Readers' Questions

*LIQUID TRI-SULFAS SUSPENSION: I have been checking through back issues of* DRUG AND COSMETIC INDUSTRY *in an effort to find the formulation for a vehicle for liquid tri-sulfas suspension. I have been unsuccessful. If you have such a formulation available, I would appreciate receiving it. San Antonio.*

I think the following should provide you with a working basis:

| | |
|---|---|
| **Sulfathiazole, Sulfadiazine, Sulfamerazine** | **2.92 Gm.** |
| **Magma Bentonite** | **36.00 cc.** |
| **Alcohol** | **13.20 cc.** |
| **Coumarin, Vanillin** | **0.07 Gm.** |
| **Cocoa** | **18.00 Gm.** |
| **Syrup, to make** | **100.00 cc.** |

If it is desired to change the flavor, 5 drops of peppermint oil can be used in place of the vanillin and coumarin. Put the mixture through a homogenizer to insure perfect dispersion of the active ingredients.

*POWDER CREAM: We are in great need of a water type emulsion cosmetic in which powders are incorporated. We have done quite a bit of experimenting along these lines, but we have not yet developed a smooth, stable product, such as we would like. We are wondering if you could suggest a stable formula which would give us a basis from which to work. Even though the formula you might suggest may not work for us, it would probably give us a basis for further experimentation. Long Island City.*

I think the following formula will serve as a good working basis for further experiment:

| | |
|---|---|
| **Glyceryl monostearate** | **10.0 per cent** |
| **Glycerine** | **3.0 " "** |
| **Heavy mineral oil** | **5.0 " "** |
| **Spermaceti** | **5.0 " "** |
| **Stearic acid** | **2.0 " "** |
| **Caustic potash U.S.P.** | **0.1 " "** |
| **Water** | **48.4 " "** |
| **Perfume** | **0.5 " "** |
| **Titanium dioxide** | **6.0 " "** |
| **Talc** | **20.0 " "** |

Dissolve the caustic potash in water then add all the rest of the ingredients with the exception of the perfume, but include the color. Bring the mixture to a boil with constant stirring. Continue stirring until all of the materials have melted and have become homogeneous. Shut off the heat and continue stirring until mass is cooled, then add the perfume. Run the mass through a roller or ointment mill if the color does not come out uniformly.

*CASTELLANI'S PAINT: We would appreciate it very much if you could supply us with a formula for Castellani's paint which is used in the Army. We have a customer who served in Korea and he used same when there, but he does not know the formula and we cannot find it in any of our books. Kenton.*

This preparation, which is extensively used in dermatology, may be made from:

| | |
|---|---|
| **Basic fuchsin solution (5% alcoholic)** | **10.0** |
| **Boric acid** | **1.0** |
| **Acetone** | **5.0** |
| **Resorcinol** | **10.0** |
| **Phenol, 5% aqueous to make** | **100.0** |

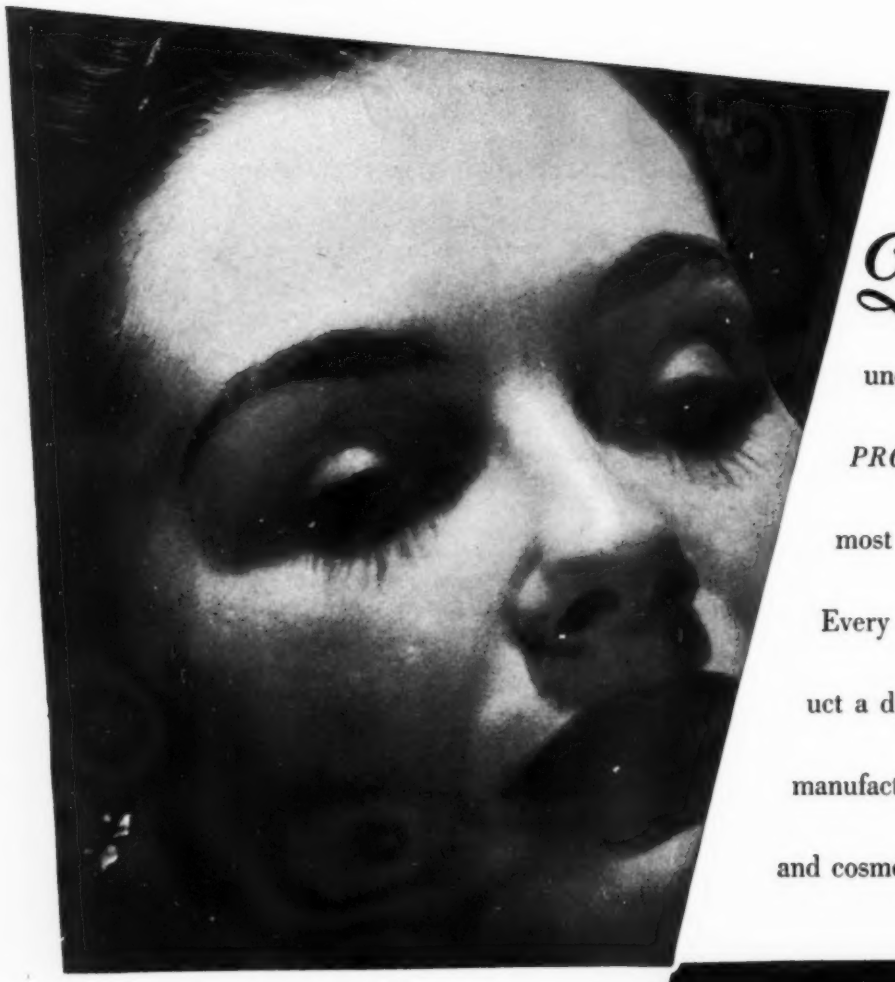
Add the fuchsin to the phenol and filter; add the boric acid and let the solution stand for two hours; add the acetone and wait two hours; add the resorcinol.

*STABLE HAIR CREAM: We want to experiment with the manufacture of a hair cream. If you have a formula for a good, stable hair cream, we would appreciate a copy of it. Tampa.*

I think the following cream, as suggested by Jannaway, is just in line with what you want:

| | |
|---|---|
| **Mineral oil, white (0.860)** | **43.0** |
| **Beeswax, white** | **3.0** |
| **Stearic acid** | **2.4** |
| **Triethanolamine** | **1.2** |
| **Glyceryl monostearate (tech.)** | **0.2** |
| **Cologne compound (33% in Carbitol)** | **1.0** |
| **Water** | **49.2** |

The first three materials and the monostearate are warmed together to about 85°C. and the triethanolamine and water, at the same temperature, are then poured in with moderate stirring, which is continued until the mass cools. The perfume dissolved in a little Carbitol (diethylene glycol monoethyl ether) is then stirred in. This formula gives a very stable cream and does not call for excessively vigorous stirring or homogenization.



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# Industry's Books

*Maleic Anhydride Derivatives*, by Lawrence H. Flett, and William Howlett Gardner, New Products Division, National Aniline Division, Allied Chemical and Dye Corp., 269 pp., (1952) John Wiley & Sons, Inc., New York, Cloth $6.50.

The chemistry of maleic acid and its trans-isomer, fumaric acid, has been the subject of studies made by many chemists for more than one hundred and thirty years. For the last thirty years, during which time maleic anhydride has been freely available from the catalytic oxidation of benzene, industrial chemists have developed a surprisingly wide range of uses for it. Its importance in the production of different types of alkyd resins, of maleinized drying oils, and of various copolymers is well known. Less widely known are its valuable uses in the manufacture of organic pigments, rubber, deemulsifying agents, oil additives, pharmaceuticals, tanning agents, detergents, wetting agents, abrasives, adhesives, cellophane, and other important technical products. This book consists of a simplified presentation of 116 different types of chemical reactions involving maleic anhydride or one of its simple unsaturated derivatives. The reaction is given whether it takes place with maleic acid, fumaric acid, their esters, amides, or other unsaturated derivatives.

*Standard Values In Blood*, Being the first fascicle of a Handbook of Biological Data: Edited by Errett C. Albritton, A.B., M.D., Fry Professor of Physiology, The George Washington University. Prepared under the Direction of the Committee on the Handbook of Biological Data American Institute of Biological Sciences, The National Research Council. 199 pp., (1952), W. B. Saunders Co., Phila., $.50.

On January 31, 1949, the National Academy of Sciences—National Research Council contracted with the Wright Air Development Center, United States Air Force, to gather and compile for publication the more basic established data on the composition and reaction of blood. A compact volume was desired that would contain authoritative tabular data of most pressing need to scientists working in the various fields of biology, including the medical sciences. The present work, first issued as Air Force Technical Report No. 6039, is the result. The tables in this unusually complete collection of data on blood are unique in the high degree of reliability sought for the data. Data have been supplied and authenticated by over six hundred leading investigators in biology and clinical medicine. The tables have been exhaustively reviewed, some by as many as twenty experts in the field.

*Handbook of Chemistry*, Compiled and Edited by Norbert Adolph Lange, Ph.D., Registered Professional Engineer, assisted by Gordon M. Forker, B.S., (Chem. Eng.), General Electric Co., Eighth Ed., 2014 pp., 53/8 x 73/4, Fabricoid $7, Handbook Publishers, Inc., Sandusky, Ohio.

Lange's is primarily a compilation of physical data. The physicist will find most of its pages filled with information directly applicable to his field. As with previous editions both the publishers and the compiler have felt that first consideration should be given to a thorough revision of material previously presented rather than to mere addition of new tables. Consequently, in this edition many changes have been made in numerical values scattered here and there throughout the book. The following is a list of subject matter not in the seventh edition and now offered for the first time: Ionization Potentials of Elements. Classification of Clay Minerals. Glossary of Inorganic Chemical Nomenclature. Titrimetric Indicators: (a) Mixed; (b) Oxidation-Reduction; (c) Fluorescent. Molar Equivalent of a Liter of Gas at Various Temperatures and Pressures. Density of Moist Air. The following tables in the seventh edition have been extended or completely rewritten: Changes in Atomic Weights from 1894 to 1951. Tables of Nuclides (Isotopes). Effective Radii of Atoms and Ions. Properties of Minerals. Properties of Hormones. Constants of Fats, Oils and Waxes. Physical and Chemical Properties of Natural Resins. Vitamins. Thermal Conductivities of Heat Insulators. Fixed Points for Thermometer Calibration. Acid-Base Indicators. Laboratory Solutions. Equations and Equivalents for Titrimetric Analysis. Gravimetric Factors and their ogarithms. Organic Solvents. Density of Aqueous Ferric Chloride Solutions. Composition and Freezing Points of Aqueous Antifreeze Solutions. Liquid Standards for Refractive Index Determinations. Correction of Observed Boiling Points. Heat of Fusion of Inorganic Compounds. Heat and Free Energy of Formation of Compounds. Laboratory Arts and Recipes. Photographic Emulsion Speed Ratings. Probable Values of the Physical Constants. Conversion Factors for Units of Measurement. International Atomic Weight Table 1952. A very thorough revision has been made of all material standing from the preceding seventh edition including hundreds of changes of numerical values scattered throughout the book as well as the extension and rewriting of twenty-six tables.

*Elements of Food Engineering*, Volume One, by Milton E. Parker, Consulting Food Engineer, Director and Professor, Food Engineering, Illinois Institute of Technology, Chicago, with the collaboration of Ellery H. Harvey, Professor of Food Engineering, Illinois Institute of Technology, and E. S. Stateler, Consultant on Foods, Wahl-Henius Institute, Chicago, Book Div., Reinhold Publishing Corp., New York, (1952), 386 pp., Illus., Cloth, $8.75.

Published in three volumes, this book treats the production, preparation, processing, handling and distribution of foods from the unit operation and unit process points of view. As such, it lays the foundation for the new profession of food engineering as distinguished from both chemical engineering and food technology. Volume I outlines the engineering factors involved in food processing and describes in detail the agricultural and nutritional aspects of food production, the extent of the food processing industries, major classifications of foods and refined food processing. Volumes 2 and 3 discuss plant layout, equipment design, production efficiency, sanitation, and give full consideration to nutritional and taste acceptability factors.

# Perfumer's Shelf

## Pentadecanolide

According to M. G. J. Beets and H. v.d. Dool (*Perf. & Essent. Oil Rec.* 43:270, 1952) the story of pentadecanolide, the macrocyclic lactone of 15-hydroxypentadecanoic acid begins with the roots of *Archangelica officinalis*. Pure, liquid pentadecanolide at 40°C. is a clear, completely colorless liquid. Lower quality can often be detected by a slight turbidity, due to traces of polymers. When the liquid lactone is cooled down, solidification takes place about 36°C. At room temperature the lactone is a white, somewhat transparent rather soft and elastic solid, in which beautiful feathery formations of crystals can often be observed. From a solvent, pentadecanolide crystallizes in needles radiating from the place of initial crystallization.

The odor of pure pentadecanolide can be described as very fine, belonging to the musk type and is amazingly lasting. In an appreciation of its intensity the sex of the observer as well as the moment in the oestrone cycle when women are concerned, seems to play a part. The most striking property is its enormous fixative power, even in very low concentration. Moreover, its balancing action in compositions is unsurpassed by any other group of compounds.

It has been shown that the olfactive properties in the macrocyclic series are functions of two structural factors, *i.e.* the number of ring-atoms and the nature of substituents and hetero atoms. Only macrocyclic compounds with 14-19 ring members one of which is not a methylene group, show the musk odor. In the homocyclic series the intensity of the odor reaches its maximum, when the "disturbing" group is a carbonyl function. The introduction of a hetero-oxygen atom in the ketones increases the odor intensity and this influence is at its maximum if the oxygen is placed in the lactone position. The introduction of a second carbonyl group in the ketones practically destroys the odor. Introducing a second hetero-oxygen in the lactones not only weakens the odor considerably, but completely removes the fixative properties. The odor of this compound is about five times weaker than that of pentadecanolide and it does not possess any fixative properties.

These investigations show clearly that the olfactive properties of the whole field of macrocyclic compounds reach a maximum in pentadecanolide.

In order to obtain accurate measurements of some of the physical properties of pentadecanolide, Beets and Dool prepared a highly purified sample of the compound. The boiling point was found to be 113°C. at a pressure of 0.69 mm. They measured the melting point by determining a temperature-time curve and it was found to be 36.15°—36.20°C. The congealing point was measured as 36.25°C. The refractive index at 20°C. is 1.4718 and the specific gravity of the purified compound is 0.9545 at the same temperature. Pentadecanolide is insoluble in water and nearly insoluble in glycerine. In practically all organic solvents its solubility is very high and surpasses by far the highest possible concentrations used in practice. Pentadecanolide does not show any characteristic details in the ultra-violet and the visible regions of its absorption spectrum.

4-Oxa-pentadecanolide, in which one of the methylene-groups of pentadecanolide is substituted by an oxygen-atom, was prepared in the laboratory and shows the following physical constants:

| | |
|---|---|
| **Specific gravity** | **0.9912** |
| **Index of refraction** | **1.4665** |
| **Melting point** | **17.0°C.** |

## Essence from Canadian Poplar Twigs

A. Goris and S. Sabetay (*Ind. parfum.* 5:303, 1950) found that the benzene extract of the twigs of Canadian poplar had an acid value of 33.3 and an ester value of 139. On distillation under reduced pressure in the presence of glycol, 31 to 32 per cent of a liquid was obtained. It had the following characteristics:

| | |
|---|---|
| **Specific gravity** | **0.9261** |
| **Index of refraction** | **1.4949** |
| **Specific rotation** | **+28°50′** |
| **Acid value** | **5.8** |
| **Ester value** | **41.1** |

## Essential Oil of Seaweed

M. Tokaoka and Y. Ando (*J. Chem. Soc. Japan* 72:999, 1951, through *Chem. Abstr.* 46:9261, 1952) have found that the brown alga, *Dictyopteris divaricata*, gives by steam distillation about one per cent of beach-smelling oil, consisting of sesquiterpenes and sesquiterpene alcohols never found in seaweeds. The sesquiterpenes consist of two types, one of which is cadiene (about 80 per cent of the oil). The other is a bicyclic terpene forming azulene by dehydrogenation with selenium. The sesquiterpene alcohols also consist of two types one is crystalline l-cadinol (melting at 137.5 to 138.5° C.); the other is a tertiary sesquiterpene alcohol forming azulene by selenium dehydrogenation.

## Oil from Dalbergia Sissoo Wood

According to Y. P. Kathpalia and S. Dutt (*Indian Soap J.* 17:285, 1952), *Dalbergia sissoo* Roxb., which is known as *Shisham* in Hindu, *Sissoo* in Bengali and *Shin* in Urdu, is a large deciduous tree inhabiting the Sub-Himalayan level tract. The wood has a dark brown color and a faint but persistent aromatic odor. The heartwood which is darker than the sapwood is almost black in color and also has a stronger and sweeter aroma. The wood is said to yield an empyrheumatic medicinal oil and the raspings of the wood are officinal, being regarded as alterative. But as no chemical work seems to have been done on the wood up to this time, Kathpalia and Dutt thought it desirable to subject it to a systematic chemical examination. As the result of the investigation, an essential oil, a fixed oil, a crystalline lactone and a brown amorphous coloring matter were isolated from the wood. The chief constituent of the essential oil which is a light yellow, pleasant smelling liquid has been identified to be nerolidol, which although widely distributed in nature exists only in traces in essential oils. The only other natural source in which the substance is known to exist in appreciable quantity is Peru bark. One other constituent of the essential oil appears to be bisabolene from its physical properties and the single derivative that could be prepared from the sub-

# TOP NOTES by Fritzsche

**A THOUGHT for the Month:**

*"Let not him who is houseless pull down the house of another, but let him work diligently and build one for himself, thus by example assuring that his own shall be safe from violence when built."*

—ABRAHAM LINCOLN

## FLOWER of the Month

January—Carnation
or Snowdrop

February—Violet
or Primrose

## MAYBE YOU KNOW HIM . . .

HE's the one man on the Fritzsche sales team who, in his time, has covered both the Middle West and the length and breadth of the Pacific Coast. Today, after 30 years of selling F. B. products, STANLEY CROUCH travels as far east as Denver, Colorado, in addition to servicing his many accounts in California from headquarters located in Los Angeles. A fine sales approach, coupled with exceptional knowledge of his products and their applications, makes him a formidable and highly respected competitor throughout the territory he now serves. Stan's trade mark is sartorial perfection. He is a devotee of tennis, baseball and the opera, but his principal interests are his six healthy children—two sons and four daughters—and his work. In these he has found the formula for continuing success and real happiness.

## RECOMMENDATION of the Month

## JASOLEA SPECIAL

. . . an excellent replacement for high priced Jasmine Absolute. Our first demonstration of this new specialty resulted in an immediate on-the-spot sale with subsequent re-orders. We are confident you, too, will like its characteristic fragrance and its moderate cost which—at $16.00 per lb.—is no reflection of its fidelity to the natural oil. You may find it a surprisingly satisfactory substitute for the much costlier jasmine in certain of your formulations. Why not a small trial order of JASOLEA SPECIAL for experimental use?

## Sprays . . . . 1953 STYLE

Along with the sprays and insecticides that have gained consumer acceptance in past years will be many a newcomer to the 1953 market. Skillful merchandising will, of course, have much to do with the eventual success of these newer products—conditional upon *one* thing: *acceptable fragrance.* It is important to note in connection with this that successful spray perfumes or deodorants are invariably distinguished first, by the effectiveness with which they mask the odorous base or toxicant and, next, by their economy. The creation of such products has been a most successful field for our laboratories which leads us to believe that we can be of helpful assistance to any manufacturer planning new spray offerings for the 1953 season. It might pay you to consult us.


CREATORS of MADE-TO-ORDER FRAGRANCES for PERFUMES, TOILETRIES and COSMETICS

ODORANTS and DEODORANTS for INDUSTRIAL and TECHNICAL USE

SUPPLIERS of AROMATIC CHEMICALS, BASIC PERFUME and FLAVOR RAW MATERIALS

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THE LABORATORY BALANCE is a symbol of accuracy — accuracy that is manifest in every operation of our business, from raw material quality control to the finished compounding, packing and delivery of our customers' order. The reward for this meticulous attention to every detail of manufacture and handling shows up ultimately in two ways... in our almost complete freedom from customers' complaints, rejected goods and damages in transit, and in the ever increasing demand for dependable, FRITZSCHE-labeled products. Beyond this, of course, is the extra satisfaction of being able to offer goods in which we, *ourselves,* have complete confidence. And *that* is probably the best reward of all!

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# Good Scents

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## ATTRACTIVE NEW FRAGRANCES *for* COLOGNE STICKS and TOILET WATERS

With the approach of spring and summer, there will be an ever mounting demand for appealing new toiletries. The selection of bouquet fragrances listed below is but a sampling of the delightful scents our laboratories have developed for the coming season.

BOUQUET K-195 ..... **$17.50 lb.**
*A popular, moderately priced French aldehyde type of fragrance.*

BOUQUET V-240 ..... **$ 6.00 lb.**
*Pleasant bouquet with a good, lasting top note; low in price.*

BOUQUET T-349 ..... **$ 8.50 lb.**
*A fashionable bouquet — heavy Oriental base with light aldehyde top note.*

BOUQUET V-123 ..... **$18.75 lb.**
*An original floral-aldehyde creation; top choice in a recent preference test.*

BOUQUET I-481 ..... **$ 9.00 lb.**
*A popular fragrance, especially attractive in stick colognes.*

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*An original blend in which fougere and other florals have been combined to produce a clean, refreshing, interesting bouquet.*

SPECIAL TRIAL OFFER: For $1.00 to cover cost of handling . . . make *three* selections from above and we'll send you ½ oz. samples of each. Please use coupon below.

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***Gentlemen: We've circled the three Bouquets we'd like to try. Attached is our dollar (M.O. or check). Please send ½ oz. samples of each.***

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**Bouquet Nos.**

**K-195 V-240**
**T-349**
**V-123 I-481**
**V-207**

*Circle THREE above*

Did you see this original memo? If not, look it over, now!

# • MEMO •

To: PHARMACEUTICAL MANUFACTURERS

From: FRITZSCHE BROTHERS, Inc.

Subject: FLAVORING PHARMACEUTICALS

Your business is concerned mostly with the development and manufacture of pharmaceuticals.

Much of our business is devoted to the study and application of flavors.

In your business you often face problems of flavoring.

In our business, we face these problems, too, but we face them because they are our customers' problems — yes, your problems — and because we are prepared to supply or work out a proper solution.

As specialists yourselves, you can appreciate the advantages, where flavor and palatability are concerned, of turning such problems over to those whose specialty for more than eighty years has embraced the whole complex science and art of using flavors.

Because of our specialization in this field we have confidence in our ability to aid you in any program designed to make your pharmaceutical products more palatable and acceptable through the judicious use of medically approved flavors.

Consultation? Yes, any time....and in strictest confidence.

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stance, but this could not be definitely confirmed for want of an authentic sample of the material.

The essential oil of the heartwood of *Dalbergia sissoo*, obtained in a yield of 0.24 per cent, was found to possess the following physical and chemical constants:

| | |
|---|---|
| **Specific gravity (20°)** | **0.9183** |
| **Refractive index (20°)** | **1.4977** |
| **Specific rotation** | **nil** |
| **Saponification value** | **5.3** |
| **Same after acetylation** | **126.5** |
| **Acid value** | **1.6** |

Bisaboline was found to the extent of 9.98 per cent and nerolidol 66.40 per cent.

## Australian Essential Oils

In reporting on recent advances in the knowledge of Australian essential oils, A. R. Penfold (*Australasian J. Pharm.* 33:851, 1952) discusses the disappearance of Huon pine wood oil. This oil, which was placed on the market over 20 years ago, was obtained from the waste wood and shavings of the Huon Pine (*Dacrydium franklini*), a well-known Tasmanian timber. It contained about 90 to 95 per cent of methyl eugenol. This oil was unsurpassed for the extermination of the powder post and furniture borers, and as a preservative for water paints and similar preparations based on casein. It possessed marked germicidal properties, and was used in the treatment of tinea and perionychia. Unfortunately, after 20 years of pioneering effort, the oil now is unprocurable. Soon after 1945, it was found that continuity of supply could not be maintained owing to the inaccessibility of the forests on the west coast of Tasmania. This oil came into prominence during the war as an insect repellent, particularly against mosquitoes. March flies and sandflies.

The sudden disappearance of Huon pine wood oil has stimulated interest in other Australian oils rich in methyl eugenol. The most promising one at this date is *Melaleuca bracteata* oil, which contains from 60 to 90 per cent of methyl eugenol. An interesting feature of the investigation on the oil of *Melaleuca bracteata* is the discovery of two physiological forms, which are rich in both methyl isoeugenol and elemicin, respectively. There is a great future before essential oils rich in any one of the phenol ethers, whether it be methyl eugenol, methyl iso-eugenol or elemicin. All three phenol ethers are of value as adjuvants in the production of pyrethrin sprays. It has been shown that the adjuvant activity of these phenol ethers is directly related to the number of methoxy groups ($OCH_3$). Elemicin has three such groups. Briefly, the effectiveness of the active phenol ether in an essential oil used as an adjuvant, is due largely to the presence of methoxy groups in association with an allyl or propenyl side chain. Apart from their uses as adjuvants, these naturally occurring phenol ethers are a source of basic materials for the perfumery and other trades. This is one of the reasons why we have established experimental plantations of Melaleuca bracteata and its two physiological forms.

In considering *Leptospermum citratum*, Penfold states that the oil of the type containing 75 to 85 per cent citral and citronellal, is a well-known Australian essential oil. It is used for the production of citral, citronellal and citronellol. Relatively small quantities are produced in Australia, but the bulk of commercial supplies of this oil comes from Kenya. Two physiological forms have also been observed with this species, Variety "A" consisting mainly of terpenes, and Variety "B" consisting mainly of the alcohols, citronellol and geraniol with their acetic acid esters. In short, it means that the aldehydes present in the type have been replaced by the corresponding alcohols and esters in Variety "B."

Penfold observes that the oil of *Eucalyptus citriodora*, the well-known lemon scented gum of Queensland, has been distilled and marketed for over 50 years. The normal citronellal content has rarely fallen below 65 per cent, although it ranges up to 85 per cent. Of recent years, however, the aldehyde content of many commercial consignments has fallen to as low as 40 to 50 per cent, and this has contributed to a marked decline in our exports. A long series of investigations has shown that there are physiological forms of E. citriodora, the most notable one being Variety "A" in which most of the citronellal has been replaced by the corresponding alcohol citronellol. The oil of this new variety consists mainly of citronellol and its acetic and citronellic acid esters, with less than 10 per cent of citronellal.

## Palmarosa Oil

In a note on palmarosa oil appearing in *Soap, Perfumery & Cosmetics* (25: 1052, 1952), it is stated that World War II focused increased attention upon this oil. Improvements in the native stills have brought about augmented yield and better quality. Indian manufacturers are rectifying the oil under vacuum so that the geraniol percentage is increased to 97 per cent and ester values reduced to 1 per cent. Indian-made geraniol-ex-palmarosa is also now available, for the use of local perfumers. For export, this oil is packed in specially made copper pots or *hundas*.

Up to the present, the world's supply of this oil has been produced in India, the oils being distilled from the wild plants. During the last 20 years, however, palmarosa grass has been grown successfully in the Seychelles from seeds obtained from India. Palmarosa oil was formerly used largely as an adulterant of Bulgarian or Turkish rose oil. It is now the source of a very high grade of geraniol. It is also widely used in cosmetics, in soap perfumes, and in the flavoring of tobacco.

## Coriander Oil from North Dakota

As part of the program under way at North Dakota Agricultural College, C. E. Miller (*J. Am. Pharm. Assoc.*, Scient. Ed. 41:598, 1952) presents a comparative study of coriander oils obtained from the dried ripe fruit of *Coriandrum sativum* and also from the partially field-dried whole plant, including the fruit. The oil from the fruit, called Sample 1, was a pale yellow liquid with a sweet odor and a characteristic taste. Sample 2, obtained by steam distillation of a portion of the partially field-dried whole plant, including the fruit, was green in color and the odor was strong and woody. The physical constants of the oils (after drying over anhydrous sodium sulfate) are recorded in the following table; for comparison, average values of coriander oil U. S. P. are included:

| | Sample 1 | Sample 2 | U. S. P. Oil |
|---|---|---|---|
| Specific gravity | 0.8688 | 0.8505 | 0.863-0.875 |
| Index of refraction | 1.4613 | 1.4520 | 1.4620-1.4720 |
| Specific rotation | +10.1° | +6.2° | +8.0°-15.0° |
| Solubility in 70% alcohol | 3 volumes | 3 volumes | 3 volumes |

The chemical properties of the two samples are summarized in the table below:

| | Sample 1 | Sample 2 |
|---|---|---|
| Acid value | Negligible | Negligible |
| Linalool, % | 80.50 | 61.42 |
| Linalyl acetate, % | 3.58 | 19.46 |
| Aldehyde, % (as decyl aldehyde) | 11.62 | 22.49 |

From these data it is seen that the oil obtained from the dried ripe fruit contained about 20 per cent more linalool than the oil from the entire plant. Both oils were found to contain a considerable quantity of aldehydes, calculated as decyl aldehyde.

# Animal Health

### Vaccination against Newcastle Disease

Experiments have been made by E. P. Johnson and W. B. Gross (*Vet. Med.* 47:364, 1952) in which chicks were atomized or nebulized with the $B_1$ virus, as a vaccination procedure for the prevention of Newcastle disease, before they were removed from the incubators in which they were hatched. Under the conditions of these experiments none of the combinations tried can be considered to be satisfactory. A method of nebulization of day-old chicks in the chick box in which they were placed when removed from the hatchers has been developed, however, in which the experiments appear to be quite successful. This method involves the administration of the vaccine while the chick box is covered by a cellophane hood. Forced air for the nebulizer was obtained by the use of an electric paint-spray pump which gives a force of approximately four pounds of pressure per square inch. By this method a group of 100 day-old chicks could be satisfactorily vaccinated with the $B_1$ virus every three minutes.

### Antibiotics in Chicken Feed

In a report of some results of feeding antibiotics to chickens, G. F. Heuser and L. C. Norris (*Poultry Sci.* 31:857, 1952) state that growth stimulation has been obtained with a number of different antibiotics. Variability was apparent for the same antibiotic in different experiments. Improved growth was obtained with as little as 1¼ parts per million of the antibiotic. Penicillin gave the most consistent and slightly better results than the other antibiotics fed although in individual trials equal responses were also obtained from aureomycin, terramycin, and bacitracin. The greatest relative growth stimulation of chicks due to antibiotics was found to occur during the first four weeks. The differences in weight disappeared as the chicks grew older.

A greater relative growth response with antibiotics was obtained in chicks fed vegetable protein rations than in those fed rations containing animal protein. In general the best weight was obtained supplemented with antibiotics. However, the growth response obtained with vegetable protein rations plus antibiotics was nearly as large as that obtained with animal protein rations supplemented with antibiotics and greater than with animal protein rations without antibiotics. Considerable variation was observed in feed efficiency. The trend, however, showed that less feed was required to produce a pound of gain with antibiotics. This was especially true when there was an appreciable growth stimulation.

Of related interest are the data presented by C. W. Carlson, D. G. Jones, R. A. Wilcox and W. Kohlmeyer to the 41st Annual Meeting of the Poultry Science Association (through *Poultry Sci.* 31:1905, 1952). They reported that a series of experiments have been conducted, involving 720 White Plymouth Rock and New Hampshire pullets during two laying and hatching seasons, on the use of penicillin and streptomycin in the mash portion of practical type mash-grain diets. Data have been obtained to support the following statements: (1) egg production and hatchability of fertile eggs are improved with some variation by supplements of penicillin and, to a greater extent, streptomycin, when the diet contains an abundance of vitamin $B_{12}$, (2) growth of progeny to four weeks of age on a vegetable type diet was somewhat impaired under certain conditions by penicillin and to a lesser extent by streptomycin in the breeder diet.

In some cases, the addition of an antibiotic, *e.g.* penicillin, to the chick diet overcame the impaired progeny growth, whereas in other instances, methionine and fish meal were also required. It is apparent that breed differences, dietary variations, and perhaps other conditions such as the outbreak of Newcastle disease encountered in the second season may influence the value of antibiotics in breeder rations.

### Pregnancy Test for Cows

According to an item in the *Farm Journal* for December, 1952, dairy scientists at the Oregon State College have developed a quick, easy-to-run pregnancy test for dairy cows. Although further study is needed, the test has proved to be 91 per cent accurate when tried on 136 cows in the college herd. Some animals were tested successfully within 10 days after service. A urine sample is needed in making the test. The sample is treated with a solution containing sodium benzenoneindophenol. If pregnant, the cow's urine turns green, stays that color for 5 to 10 minutes. If the cow is not pregnant, the urine color reappears within a matter of seconds after the initial color change.

When the test is developed to a point where any dairyman can use it, it should cut heavy losses. This is evident in the statement of J. H. Byers, one of the research team, that the number of dairy cattle sent to slaughter as sterile and non-pregnant, but which are actually with calf, amount to 10 per cent of all dairy animals butchered.

### New Vaccine for Hog Cholera

Hog cholera immunization with a new vaccine is reported by N. H. Casselberry, W. A. Malmquist, R. B. Houlihan and W. H. Boynton (*Vet. Med.* 48:24, 1953). The new product, named Viracine, is a vacuum-dried, live, modified hog cholera virus vaccine which is prepared from virus cultivated in bacteriologically sterile tissue cultures by adaptation of experimental methods to commercial production. This vaccine was administered with hog cholera antiserum in field studies in California and Iowa. A total of 7,313 pigs in 51 droves were vaccinated and results reported. After vaccination, practicing veterinarians submitted field reports three to six weeks after each herd was vaccinated. Twenty-one pigs died within this period after vaccination from all causes and vaccination was not incriminated as the cause of deaths. A few pigs from each herd were left unvaccinated and susceptibility checked at a licensed laboratory. A total of 194 control animals were exposed; 187 developed typical hog cholera. In only one Iowa drove were control animals completely refractory to virulent virus injection. After vaccination and at intervals of from two to 7½ months, a few pigs from each herd were challenged. Of a total of 165 animals so exposed to virulent infection,

only three have failed to survive. On a percentage basis, 98.1 per cent were fully protected up to 7½ months post-vaccination.

A group of ten 170-pound animals which had been vaccinated with Viracine and serum and retained on the same farm for 90 days were hyperimmunized with the required dose of 5 cc. hyperimmunizing virus per pound body weight. At the same time, ten animals from another farm in the same area vaccinated by the same veterinarian by the simultaneous serum and virus method were also hyperimmunized. All of these survived. Neither group was entirely satisfactory in that bleedings were missed because of high temperatures, but the Viracine and serum treated group showed fully as much resistance to the hyperimmunizing dose as those vaccinated with serum and virus.

## Amino Acid Requirements of Poultry

The latest information bearing on the specific amino acids requirements of chicks, poults and laying chickens has been reviewed by H. J. Almquist (*Poultry Sci.* 31:966, 1952). These requirements are summarized in the following table:

*Requirements of the essential amino acids for chickens and turkeys*

| Amino acid | Young chicken percent of diet | Young turkey percent of diet | | Laying chicken percent of diet |
|---|---|---|---|---|
| Arginine | 1.2 | 1.4 | 1.6 | |
| Lysine | 0.9 | 1.3 | 1.5 | 0.50 |
| Histidine | 0.15 | | | |
| Methionine or | 0.8 | 0.75 | 0.87 | |
| Methionine | 0.45 | 0.45 | 0.55 | 0.28 |
| Cystine | 0.35 | 0.30 | 0.35 | |
| Tryptophan | 0.2 | 0.22 | 0.26 | 0.15 |
| Glycine | 1.0 | 0.9 | 1.0 | |
| Phenylalanine or | 1.6 | | | |
| Phenylalanine | 0.9 | | | |
| Tyrosine | 0.7 | | | |
| Leucine | 1.4 | | | 1.4 |
| Isoleucine | 0.6 | 0.72 | 0.84 | |
| Threonine | 0.6 | | | |
| Valine | 0.8 | | | |
| For Protein Level | 20.0 | 24.0 | 28.0 | 15.0 |

Almquist also points out that the amino acid requirements increase as the protein level in the diet increases, and vice versa. Amino acid requirements expressed as a percentage of the dietary protein appear to decrease as the protein level increases. Amino acid requirements are influenced in some cases by size, age and variety of fowl. The general effect of antibiotics is not to decrease protein or amino acid requirements but possibly to permit more efficient utilization.

## Terramycin in Fistulous Withers

Terramycin has been used by L. L. Landon[5] (*J. Am. Vet. Med. Assoc.* 121: 290, 1952) in an effort to establish a rapid, safe and effective means of treating fistulous withers (supra-spinous bursitis). Terramycin, given intravenously, was used in conjunction with drainage incisions in two cases of fistulous withers showing positive Brucella agglutination, both of which were regarded as hopeless after unsuccessful surgical intervention. An intravenous dosage of approximately 2 mg. per pound for seven days on one patient, and approximately 3 mg. per pound for ten days on the other patient, was apparently sufficient. The initial dose used was double the daily sustaining dose. Apparently complete recoveries were achieved in both cases. In neither case were there side effects or untoward symptoms. The course of recovery in both was uneventful and uniform.

## Evaluation of Sulfa Drugs

Despite the addition of various antibiotics to the practitioner's armamentarium say H. J. Florestano and M. E. Bahler (*J. Am. Vet. Med. Assoc.* 121: 474, 1952), the sulfonamides continue to occupy an important place in the treatment of infectious diseases. In fact, their position has been greatly strengthened since the introduction of mixed sulfonamide therapy. Considering the number of sulfonamides now being used in both human and veterinary practice, a need was felt for a more critical evaluation of their antibacterial properties, which could be possible only by testing them simultaneously and under carefully controlled conditions. It was thus during an investigation of the absorption and excretion of the more commonly employed sulfonamides that such a study was made in which a variety of pathogens frequently encountered in veterinary practice were used as test organisms. In the *in vitro* experiments nine commonly used sulfas were tested against 18 different species of bacteria representing 11 genera. The findings in these tests are given in the following table:

In general, summarize Florestano and Bahler, the order of effectiveness of the drugs was as follows: sulfathiazole > sulfadiazine = sulfamerazine = sulfisoxazole > sulfapyridine = sulfamethazine > sulfabenzamide = sulfacetamide > sulfanilamide.

## Phosphorus Requirements of Growing Chickens

Experiments have been conducted by W. F. O'Rourke, P. H. Phillips and W. W. Cravens (*Poultry Sci.* 31:962, 1952) to determine the phosphorus requirements of the chick at different stages of growth. A purified ration was used to prevent complication due to the question of phytin phosphorus availability. It was established for the conditions of the experiments that the phosphorus required by the chick decreases with increasing age. The minimum levels of phosphorus required were 0.43 per cent to 3 week, 0.35 per cent from 2 to 5 weeks and 0.27 per cent from 4 to 10 weeks.

## Drugs for Fasciola Hepatica

According to E. Lienert and H. Mathois (*Wein. Tierarztl. Monatsschr.* 39:344, 1952 through *Vet. Med.* 47:522, 1952) there are two basic requirements which new agents must fulfill if they are to be effective against the parasite, *Fasciola hepatica*. First, they should be eliminated through the bile and, second, they should be nontoxic for cattle and sheep. With these considerations in mind an investigation of 22 drugs known to be eliminated through the bile, were examined at the Veterinary College of Vienna. Of these, two substances, hydroxyquinoline sulfate (nontoxic) and desoxycholic acid (toxic) were found to be more effective than eosine and fluorescein. As effective as the last-mentioned substances are sodium iodide, sulfamethazine, congo red, and phenol red, all of which are of low toxicity.

**Comparison of in Vitro Activities of Sulfonamides**

| Organism | Lowest concentration of drug (mg. /100 cc.) preventing visible growth after seventy-two hours' incubation* | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | SA** | SP | ST | SD | SM | SMM | SB | SAC | SX |
| Aerobacter aerogenes | 5.0 | 0.63 | 0.16 | 0.08 | 0.16 | 2.5 | | | |
| Brucella bronchiseptica | 20.0 | 0.63 | 0.31 | 0.31 | 0.31 | 2.5 | 10.0 | 1.25 | 0.31 |
| Corynebacterium pyogenes | >80.0 | >80.0 | >80.0 | >80.0 | >80.0 | >80.0 | >80.0 | >80.0 | >80.0 |
| Diplococcus pneumoniae (type 1) | 10.0 | 2.5 | 1.25 | 5.0 | 5.0 | 2.5 | | | |
| Escherichia coli | 2.5 | 0.16 | 0.04 | 0.02 | 0.02 | 0.08 | 0.16 | 0.31 | 0.02 |
| Pasteurella bovisseptica | 20.0 | 2.5 | 0.31 | 1.25 | 0.63 | 1.25 | 0.63 | 2.5 | 0.63 |
| Pasteurella suiseptica | 40.0 | 2.5 | 2.5 | 2.5 | 1.25 | 5.0 | 80.0 | >80.0 | 20.0 |
| Salmonella choleraesuis | 80.0 | 10.0 | 0.63 | 1.25 | 2.5 | 20.0 | 10.0 | 5.0 | 0.63 |
| Salmonella enteritidis | >80.0 | 20.0 | 2.5 | 5.0 | 10.0 | 40.0 | | | |
| Salmonella pullorum | 80.0 | 5.0 | 1.25 | 1.25 | 2.5 | 20.0 | | | |
| Salmonella typhimurium | 80.0 | 5.0 | 0.63 | 0.63 | 2.5 | 5.0 | 20.0 | 10.0 | 1.25 |
| Shigella dysenteriae | 5.0 | 0.63 | 0.04 | 0.16 | 0.16 | 0.31 | | | |
| Shigella gallinarum | 80.0 | 20.0 | 2.5 | 2.5 | 10.0 | 80.0 | | | |
| Staphylococcus aureus | 40.0 | 10.0 | 0.63 | 10.0 | 5.0 | 10.0 | 5.0 | 5.0 | 0.63 |
| Streptococcus agalactiae | 40.0 | 20.0 | 5.0 | 10.0 | 20.0 | 20.0 | 20.0 | >80.0 | 10.0 |
| Streptococcus equi | 20.0 | 5.0 | 1.25 | 5.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| Streptococcus Pyogenes | 40.0 | 20.0 | 10.0 | 20.0 | 20.0 | 20.0 | 40.0 | 40.0 | >40.0 |
| Vibrio cholerae | 10.0 | 1.25 | 0.08 | 0.31 | 0.31 | 0.63 | | | |

*Less than a fourfold difference in endpoints not considered as significant.

**SA = sulfanilamide; SP = sulfapyridine; ST = sulfathiazole; SD = sulfadiazine; SM = sulfamerazine; SMM = sulfamethazine; SB = sulfabenzamide; SAC = sulfacetamide; SX = sulfisoxazole.

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| *Packaging* ➧ | **Available in polyethylene bag in 1 kilo fibre drum; smaller quantities in amber screw cap bottles.** |

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**In Canada: Hoffmann-La Roche Ltd. 286 St. Paul Street, West, Montreal, Quebec**

# Abreast Of The Markets

## Markets Assume Stable Attitude with Few Price Changes Occurring; Clove Production Much Lower

Although there was a great deal of activity in the markets last month, there were very few price changes, indicating that a certain degree of stabilization has set in.

As far as the botanicals were concerned, there were a few scattered price changes which failed to offer any suggestion of a trend. It is the belief in the industry, however, that as soon as consumers enter the market on a large scale in order to seek replacements, they will have to buy from new material. The older stocks having been pretty well used up, and most of the long-standing contracts having been filled, the new materials which will be appearing on spot from now on, according to spokesmen, will very likely be quite a bit higher in price.

As for the essential oils, these items have in general been declining steadily and seem to be leveling off at the present time. Most of the oils, with a few exceptions, such as clove, dillweed, anise and cassia, are in good supply with no shortages expected in the foreseeable future.

Some sources in the essential-oil field expressed the opinion that the prices on the essential oils are now in general almost too low for the prevailing conditions. They further suggested that there would very possibly be an over-all increase in the majority of oils as the year progresses.

Vanilla beans are a little higher than a few months ago and seem to be well on the way toward higher levels, since last year's low prices discouraged production at the origin. Today, the shortage is beginning to be felt, a factor which is tending to push the price up.

On the chemical side of the picture, there were sizable imports of quicksilver into the United States early last month which were expected to be taken up almost immediately as replacements by consumers. Alcohol is still selling at 55 cents a gallon in most quarters, although it is reported there are some dealers quoting lower figures which were quoted for alcohol which was contracted for some time ago when the alcohol price was at a lower level.

**Prices quoted in this section were current on the first of this month.**

### Cod Liver Oil Unchanged

With demand for cod liver oil at its height during this period of the year, dealers reported this commodity was on the active side, with the price still ranging between $1.55 and $1.65 a gallon.

### Candelilla Wax Restrictions

The gathering of candelilla wax in Mexico has been prohibited during the period from December 1, 1952, through September 30, 1953, according to a report in *Foreign Commerce Weekly*. It is reported that extensive cutting of plantings in the states of Chihuahua, Coahuila, Zacatecas, Nuevo Leon, Durango and San Luis Potosi has endangered conservation of the species and will hamper increased production.

### Data on Cloves

By the end of the 1951-52 season there was a total of 11,756,473 pounds of cloves, compared with 43,500,000 pounds for the previous year. In addition to this amount, growers are believed to be holding back an estimated 360,000 pounds. The island of Zanzibar produced only about 14 per cent of the crop; all the rest was from Pemba.

Exports in the seasonal year ended June, 1952, totaled 16,847,820 pounds, compared with 39,954,283 pounds in 1950-51. The leading purchasers were Singapore, 8,697,785 pounds; India, 5,685,868 pounds; Indonesia, 714,675 pounds; the United Kingdom, 674,940 pounds; and the United States, 413,400 pounds.

Gathering of the 1952-53 clove crop began about mid-October and is expected to amount to 2,088,000 pounds in Pemba and 720,000 in Zanzibar for the first harvest of the crop year.

### Terpin Hydrate Reduced

The price of terpin hydrate dropped 10 cents last month, with one supplier quoting a 100-pound drug at 64 cents a pound, and a 25-pound drum at 67 cents a pound.

### Karaya Gum Sluggish

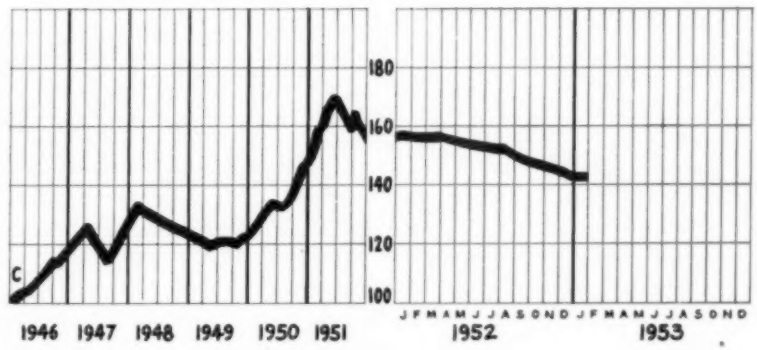
There was very little activity in this item last month, and the expected pickup in business failed to materialize. At the same time, the price remained fixed between 19c and 30c.

### Balsam Copaiba Up a Little

Balsam Copaiba para was a little higher in January at $1.05 a pound. This was one of the many botanicals in

*(Continued on page 249)*

**25 Cosmetic Raw Materials—Unweighted Price Index. 1926 = 100.**




The cosmetic raw materials index went up very slightly from 142.1 to 142.3. Balsam copaiba was higher, menthol, lower.

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## Alcohol Market Very Active as RFC Resumes Synthetic Rubber Program; Much Interest Shown in Mercury; Vanilla Continues Higher

Demand for alcohol is being maintained at a brisk level, according to spokesmen in the field, who stated that both the fermentation and synthetic material were sufficient to take care of all needs.

The Reconstruction Finance Corp. last month announced that it had made an agreement with three suppliers in regard to the purchase of 15 million gallons of alcohol for use in synthetic rubber plants. According to the arrangement, each of the three companies will provide 5 million gallons during the specified time. These plants were recently reactivated to meet the increased need for synthetic rubber.

The Alcohol and Tobacco Tax division of the Bureau of Internal Revenue, Treasury Department, last month released the following data on the supply, production, withdrawals, and stocks of ethyl, completely denatured and specially denatured alcohol during the month of November, 1952, in comparison with November, 1951.

| | Gallons | |
|---|---|---|
| | 1952 | 1951 |
| **Production** | | |
| ‡Ethyl | 31,552,121 | 40,477,497 |
| *Completely denatured | 52,614 | 86,809 |
| *Specially denatured | 19,560,881 | 24,338,477 |
| **Withdrawals** | | |
| ‡Ethyl, tax paid | 2,101,075 | 3,178,913 |
| tax free | 34,667,950 | 54,404,915 |
| *Completely denatured | 62,578 | 98,546 |
| Specially denatured | 18,365,017 | 24,097,609 |
| **Stocks** | | |
| ‡Ethyl | 81,702,475 | 91,110,043 |
| *Completely denatured | 27,160 | 41,133 |
| *Specially denatured | 8,521,327 | 7,435,978 |

*Wine gallons. ‡Proof gallons.

### Quicksilver Steady

During the past month more than 3000 flasks of quicksilver arrived in the United States. Of these imports, three lots amounting to 2,700 flasks originated in Italy, and a single lot of 551 flasks came from Yugoslavia. Spokesmen stated that these arrivals do not represent a large increase in the consumption of mercury, but that they do represent a re-entry into the market on the part of consumers.

For many months prospective purchasers of the metal have been postponing replacements as long as possible, and now that the new year is well under way they have finally started buying. At the same time, the government is purchasing large quantities of the metal.

### Cream of Tartar Unchanged

While demand for cream of tartar has been maintaining a steady pace, there have been no indications of any price movements in the offing. Some lower-priced material has arrived in this country of late which has tended to offset any firmness that otherwise might have developed.

### Vanilla Beans a Little Higher

The price of vanilla beans inched up a little more last month, continuing the rising trend which just recently began to develop. While the Bourbon beans remained in the range between $4.50 and $4.75, the Mexican cuts went up to $4, and the Mexican whole beans, up to $4.50 a pound. Dealers report that the price will probably continue upward for a long time, until the production in the origin once again catches up to the demand.

### Activity in Paraffin

There was considerable activity and much buying interest in paraffin last month, and at the same time production of the wax was at a high level. No price changes occurred, as the available supply of the wax exceeded the demand by a comfortable margin.

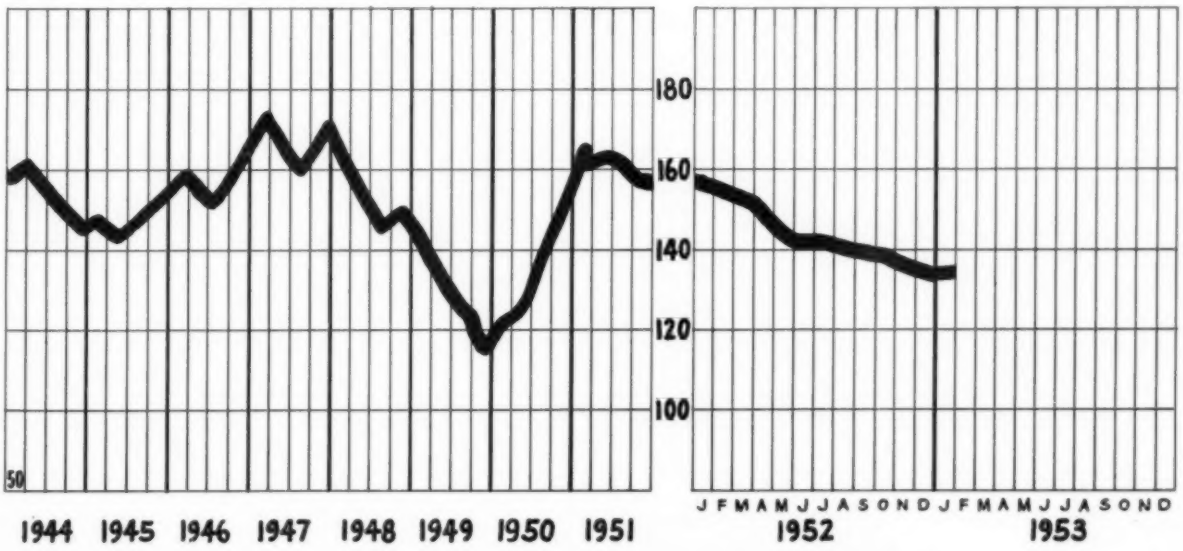
### Synthetic Vitamin A Down

Early last month synthetic Vitamin A was reduced to the following prices: vitamin A acetate, 12½ cents per million units, and vitamin A palmitate, 12 cents per million units. Spokesmen in the industry state that if the fish oils from Japan are reduced further, which is a possibility, the natural vitamin will become much more competitive with the synthetic material.

### Menthol Still Lower

The price of menthol went down to about $5 a pound last month; however, it is quite possible that a reversal may develop shortly. The spot supplies of menthol are gradually being depleted as the demand picks up. Consumers may

**50 Raw Materials—Weighted Price Index. 1926 = 100.**




The price index of fifty commodities for January went up from 132.2 to 134.2.

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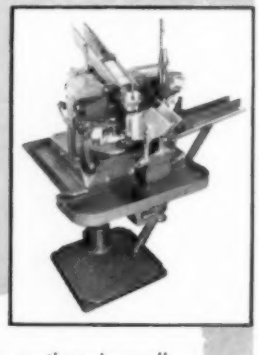

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## January Price Changes

**UP**

Apricot Kernel Oil 3c
Balsam Copaiba Para 10c
Carnauba Wax No. 1 13c
North County No. 3 14c
Celery Oil $1
Ergot 15c
Ipecac Root 50c
Vanilla Beans, Mex. Cuts 25c
Mex. Whole 15c

**DOWN**

Agar Agar, No. 1 15c
Caraway Oil 20c
Coriander Oil $1
Menthol 25c
Orange Oil, Amer., Cold pressed 20c
Amer., Distilled 10c
Petitgrain Oil, S.A. 15c
Sage Oil, Dalmatian 35c

soon find themselves having to pay higher replacement costs.

### Carnauba Wax Firmer

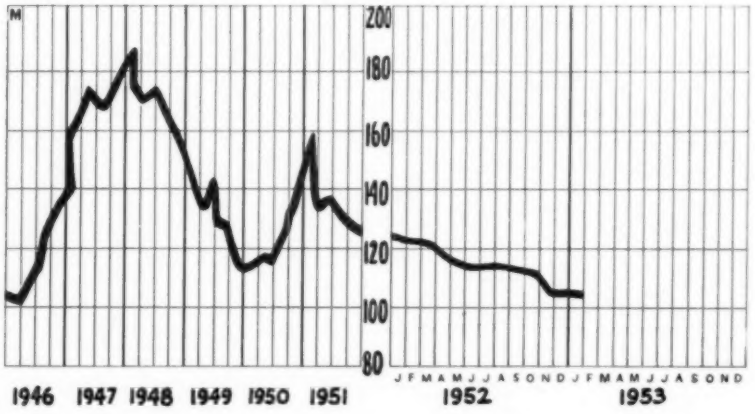
Stocks in New York of carnauba wax are being used up. Since the spot price of the wax is less than that in Brazil, consumers will soon find the replacement material on a higher price level. Carnauba No. 1 was selling at $1.37 a pound last month, and the North Country No. 3, at $1.12 a pound.

### Balsam Copaiba Up

*(Continued from page 245)*

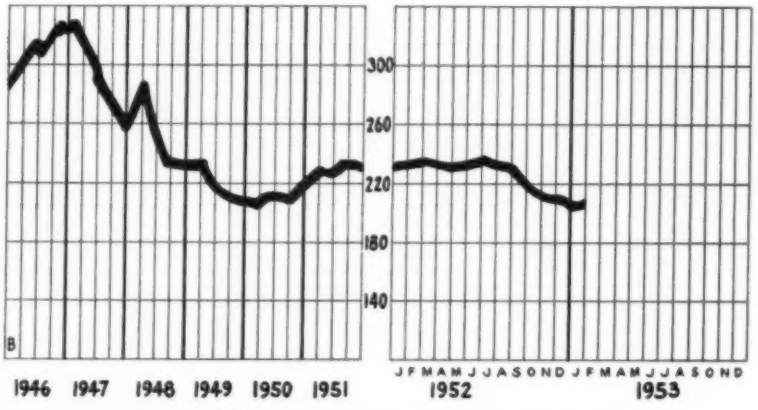
which rising prices are expected in the months to come. A large number of these items are being quoted at prices which were in effect several months ago when contracts were signed. Now that the material has arrived on the spot market, the quotations are unchanged. As soon as this old material is used up, however, and replacement stocks enter the market, a new set of values will be established, say the dealers, and many of these items will be quoted at higher figures.

**15 Medicinal Chemicals—Weighted Price Index. 1926 = 100.**




The medicinal chemicals index dropped slightly from 104.5 to 104.2. Menthol was lower.

**15 Botanicals—Weighted Price Index. 1926 = 100.**




The botanicals index went up a little from 206.2 to 206.8. Ergot and ipecac root was higher; agar was lower.

### Agar Agar Down

Owing to increased production and exports in Japan, the price of agar last month fell off to $2.35 a pound. Some observers were expecting lower prices to come in the future.

### Citral Readily Available

Because lemongrass oil is so plentiful at the present time, citral, a derivative, is being produced in ample quantities and has not been affected by any price fluctuations on the part of the essential oil.

### Belladonna Sluggish

Since most consumers of this product still have considerable material on hand, there has not been too much of a demand for belladonna in recent weeks. Under these circumstances, there is more than enough on spot to handle all requirements for quite some time.

### Citronellol Situation Favorable

Citronellol, like citral, was last month in a very favorable position owing to the ready supply of citronella oil in the spot market. This derivative was still being quoted from $1.75 to $2.45 a pound, and was plentiful enough to handle all the requirements that have been entering the market.

### Apricot Kernel Oil More Active

The price of apricot kernel oil went up 3 cents last month to 34 cents a pound. It was the feeling in the industry that a decided firmness would continue to develop, judging from the consumer interest and the limited supply of the material.

### Orange Oil Even Lower

American orange oil continued its price drop last month, with the cold pressed oil going down to $1, and the American distilled oil, down to 70 cents. The West Indian and Italian orange oils remained at $2.75 and $3.25, respectively, on the lower end of the range, and at $4.50 and $6.50 at the upper end. Producers in Florida are apparently way ahead of the demand for the oil

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and, similar to a few years ago, are now glutting the market with excess oil

### Lemongrass Oil Plentiful

There were no price changes in lemongrass oil last month, the range still extending from $1.20 to $1.65. There is more than enough oil on hand at the present time to satisfy all consumers.

### Spearmint Oil May Advance

A few spokesmen have voiced the opinion that spearmint oil will advance in price shortly. This point of view stems from the present condition in which growers from the Midwest are hesitating to fill any orders because the supply position of the oil is very limited. These producers, moreover, by holding back their stocks, will bring about an even firmer market which in turn will help boost the price up.

### Sage Oil Down to $7.50

Dalmatian sage oil went down to $7.50 last month, continuing the trend in that direction. This item is expected to level off, however, in the very near future.

### Citronella Oil Unsteady

This oil, which has been greatly overproduced during the past year in both Formosa and in Guatemala is continuing in a very unsteady market. While some sources report that the overproduction is expected to continue for a long time, there are also contrary reports which state that production in these two areas has fallen considerably as a result of the very low prices so prevalent in recent months.

The Ceylon oil is currently being quoted from 65 cents to 90 cents, and the Java oil, from 65 cents to $1.

### Cassia Oil Puzzling

There were reports last month in some quarters that cassia oil had decreased somewhat in price from the previous level. This development is difficult to explain in view of the fact that no replacements from China are at this time available. Stocks in New York are similarly very limited. The price range during the end of January extended from $5.50 to $6.50 a pound.

### Anise Oil Unsettled

Contrary to cassia oil, anise oil has increased in price, according to some dealers, by as much as 10 cents a pound. This was a direct result of the inaccessibility of the oil as far as China is concerned. It seems only natural that both this oil, and that of cassia, will remain unsteady for many months to come and will continue that way until the embargo is lifted on Chinese exports.

### Bergamot Oil Lower

While some essential-oil houses indicated a price of $13 a pound for bergamot oil last month, some quarters reduced that oil to $11.50 a pound. This reduction is a result of the lowering of the floor price put into effect by the Cousortium, and also the lower shipping prices of the oil which appeared in the latter part of 1952. Only now are the spot prices reflecting this development at the origin, as most of the dealers in this country have been selling their previous stocks of the oil before adopting the new price. The over-all belief in the trade is that this item will continue to fall slowly until the price level becomes more attractive consumerwise.

### Bois de Rose Plentiful

The price of bois de rose oil was beginning to decline toward the end of January, although most dealers were quoting at that time in the range between $3.65 and $4.50. The softening of the market is being caused by the large quantities of oil which are on hand at the present time in Brazil. It appears as if the trend will continue for the rest of the season, until the surplus stocks have been used up.

### Caraway Oil Lower

Replacement stocks of caraway oil from Holland were considerably reduced in price last month in comparison with former quotations. This resulted directly in a reduction of the spot prices extending from $3.30 to $3.55. In spite of all this, there was only slight activity in this item.

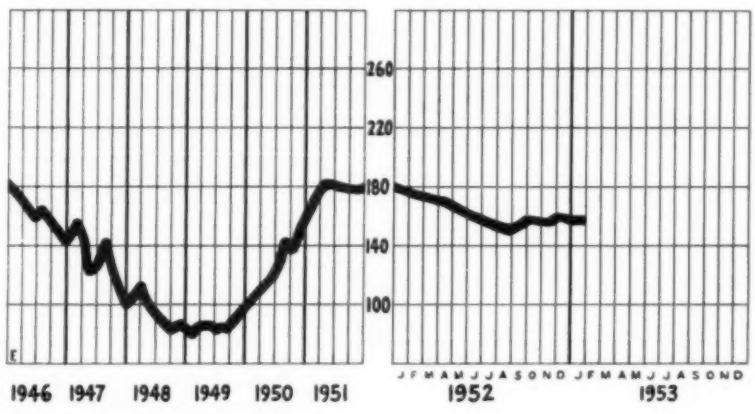
### Shortage in Dillweed Oil

A decided scarcity in dillweed oil has been shaping up over the past year and has now reached the spot market. It began to materialize in the early part of 1952 and extended through that year, having been caused by the low spot price of the oil. This price level, say the producers, was so low that it discouraged production of the oil in 1952, and the scarcity has now reached the open market. There will not be any new material to relieve the situation until August of this year.

### Clove Oil Still Critical

Clove oil is continuing in very short supply as a result of O.P.S. restrictions in this country. "The new crop of Zanzibar clove is in, "reports D & O News, "and is once again short. Selling price of the spice is now $1.39 per pound, which calls for an oil market from $10 to $10.50 per pound. With an O.P.S. ceiling price of $3.25 per pound based on spice selling at approximately 35 cents per pound, American distillers have been forced to completely abandon operations. Indonesia has been taking the largest part of the Zanzibar production during recent months for use in the manufacture of cigarettes, and if this demand continues, price of the spice will remain high."

**15 Essential Oils—Weighted Price Index. 1926 = 100.**




The essential oils index remained at 156.9. There were no changes.

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## The Neutralizer in Cold Waving

(*Continued from page 221*)

**Table I**

**AMMONIUM THIOGLYCOLATE 0.62N—SODIUM BROMATE 1.0N**

| Conditions | mM SH/G. Hair | Load-Elongation Index |
|---|---|---|
| 5 Min. Reduction | 0.539 | 0.389 |
| 10 " " | 0.564 | 0.338 |
| 20 " " | 0.644 | 0.300 |
| 5 Min. Neutralization | 0.130 | 0.455 |
| 10 " " | 0.071 | 0.610 |
| 15 " " | 0.026 | 0.699 |

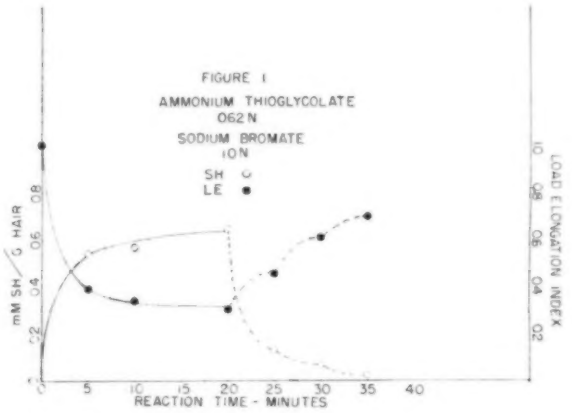


Figure 2 (Table II) shows the results of a comparable experiment carried out with catalyzed ammonium thioglycolate. Here the wound tresses were thoroughly wet with the lotion, which contained 35 ppm of manganese. The SH rose immediately, although the shape of the curve is significantly different from the shape of the comparable portion of the graph in figure No. 1. The 20 per cent index dropped as expected. At the end of twenty minutes the tresses were blotted and left exposed to air. Although no neutralizer as such was introduced, we see a sharp reversal in the trends of each of the two curves, and we observe that the SH values fall away to such a level as to indicate that the Group Two forces are substantially rebuilt. The time required for this reaction is considerably larger than the time required for a comparable reduction in SH and rise in 20 per cent index when the neutralizer is used. This is of controlling importance to us in our work, because we are interested exclusively in processes suitable for the professional beauty shop. In the beauty shop the operators cannot keep the hair on the rods over such extended times.

**Table II**

**CATALYZED AMMONIUM THIOGLYCOLATE 0.62N 35 ppm Mn Air Dried**

| Conditions | mM SH/G. Hair | Load-Elongation Ibdex |
|---|---|---|
| 5 Min. Reduction | 0.350 | 0.680 |
| 10 " " | 0.561 | 0.469 |
| 15 " " | 0.586 | 0.432 |
| 20 " " | 0.633 | 0.379 |
| Towel Blotted | | |
| 15 Min. Neutralization | 0.242 | 0.634 |
| 30 " " | 0.149 | 0.675 |
| 60 " " | 0.089 | 0.695 |
| 120 " " | 0.069 | 0.743 |
| 220 " " | 0.060 | 0.748 |
| 460 " " | 0.055 | 0.756 |

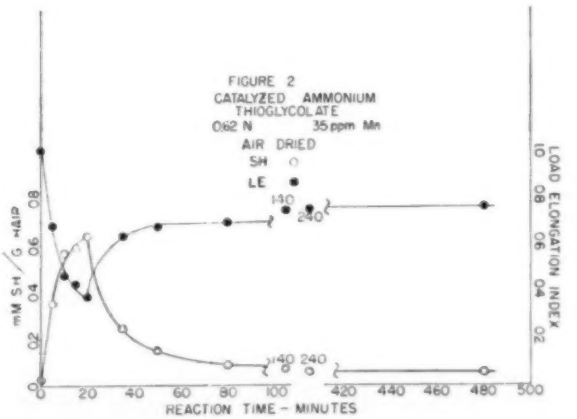


**Table III**

**CATALYZED AMMONIUM THIOGLYCOLATE 0.62N 35 ppm Mn Dryer Dried**

| Conditions | mM SH/G. Hair | Load-Elongation Index |
|---|---|---|
| 15 Min. Neutralization | 0.263 | 0.591 |
| 30 " " | 0.243 | 0.654 |
| 60 " " | 0.229 | 0.594 |
| 90 " " | 0.211 | 0.632 |
| 120 " " | 0.161 | 0.629 |

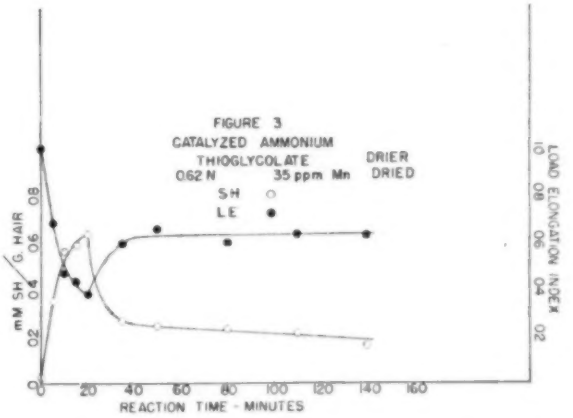


Figure 3 (Table III) shows an experiment carried out in exactly the same way, again using a catalyzed ammonium thioglycolate solution. The values plotted for the first twenty minutes are the same as those plotted in Figure 2. At this point, the tresses were placed under a dryer. Our aim was to see whether we could achieve the results shown in Figure 2 at a speed compatible with professional beauty shop practice. Neither the SH values shown nor the 20 per cent indices recorded are acceptable. I might mention in passing that the damaging effect of the dryer in this kind of waving does not seem to be generally appreciated in the field.

Figure 4 (Table IV) shows a similar experiment carried out with non-catalyzed thio. Again the tress was blotted at the end of twenty minutes and allowed to air dry. It can be seen that the SH values are reduced satisfactorily and the 20 per cent index figures rise to

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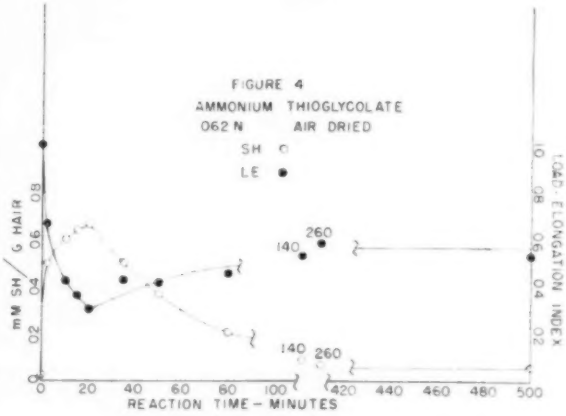
**Table IV**
**NON-CATALYZED AMMONIUM THIOGLYCOLATE**
**0.62N Air Dried**

| Conditions | mM SH/G. Hair | Load-Elongation Index |
|---|---|---|
| 2 Min. Reduction | 0.500 | 0.670 |
| 10 " " | 0.602 | 0.424 |
| 15 " " | 0.642 | 0.361 |
| 20 " " | 0.667 | 0.303 |
| Towel Blotted | | |
| 15 Min. Neutralization | 0.501 | 0.429 |
| 30 " " | 0.370 | 0.416 |
| 60 " " | 0.210 | 0.459 |
| 120 " " | 0.092 | 0.535 |
| 240 " " | 0.070 | 0.589 |
| 480 " " | 0.060 | 0.533 |




an acceptable level. We suspect that the presence of traces of iron in the thio lotion which we used in this experiment were of value in facilitating the air oxidation of the thio during the drying process.

**Table V**
**THIOGLYCOLATE 0.62N—SULFITE 0.25N**
**Air Dried**

| Conditions | mM SH/G. Hair | Load-Elongation Index |
|---|---|---|
| 5 Min. Reduction | 0.363 | 0.670 |
| 10 " " | 0.436 | 0.539 |
| 20 " " | 0.570 | 0.458 |
| Towel Blotted | | |
| 15 Min. Neutralization | 0.424 | 0.572 |
| 30 " " | 0.303 | 0.624 |
| 60 " " | 0.163 | 0.710 |
| 120 " " | 0.166 | 0.634 |
| 280 " " | 0.108 | 0.706 |

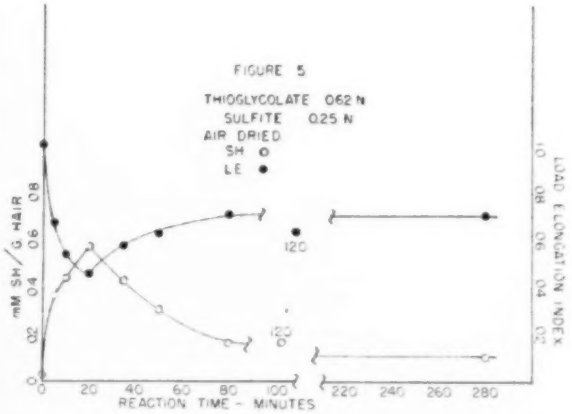



Figure 5 (Table V) shows the effect of adding .25N

sulfite to the thio lotion used in the preceding experiments. The sulfite cuts down the reducing power of the lotion, as indicated by the lower SH values and higher 20 per cent indices reached in the twenty minute processing period. The sulfite also increases the resistance of the reducing agent to air oxidation. Under the conditions of this experiment the rate of regeneration of the Group Two forces is significantly lower than in the preceding graphs, and we would not regard the terminal values as acceptable.

**Table VI**
**THIOGLYCOLATE 0.62N—SULFITE 0.25N**
**Sodium Bromate 1.0N**

| Conditions | mM SH/G. Hair | Load-Elongation Index |
|---|---|---|
| 5 Min. Reduction | 0.361 | 0.485 |
| 10 " " | 0.412 | 0.384 |
| 20 " " | 0.501 | 0.381 |
| 5 Min. Neutralization | 0.099 | 0.519 |
| 10 " " | 0.046 | 0.657 |
| 15 " " | 0.026 | 0.735 |

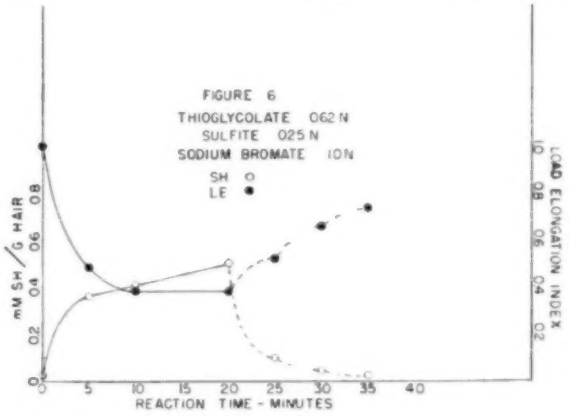



Figure 6 (Table VI) describes a similar experiment in which a 1N solution of sodium bromate was introduced at the end of the twenty minute processing time. Again, because of the sulfite-diminished reducing power of the lotion, the 20 per cent index has not gone down so far nor the SH content risen so high at the end of twenty minutes as in the case of the other lotions previously described. The bromate effectively restores the Group Two forces, however, in rapid order.

Now I would like to spend just a few minutes discussing the overall status of permanent waving as it appears to one researcher in the field. We at Rayette have conducted no surveys, nor are we informed on the results of those of others. Being completely unhampered by facts, therefore, I don't hesitate to suggest that the women in this country who are really *soundly* satisfied with their last permanent, are in a considerable minority. Moreover, of this minor group, a minority will still be soundly satisfied six months from now.

I am saying that we here are sharing a large and hungry market of preponderantly indifferent customers. This is hazardous operation. We are faced not only with the normal danger that a competitor will come out with a markedly better product and so bankrupt us, but also with the quite abnormal danger that a competitor will come out with an inferior but markedly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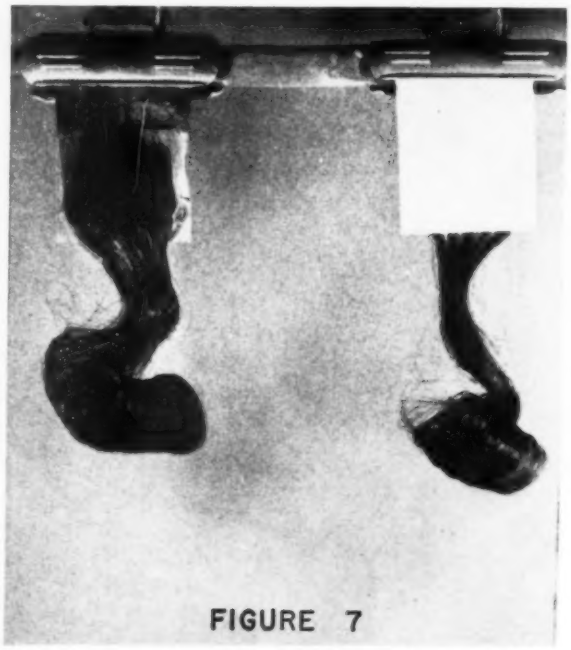

FIGURE 7

Let me show you a picture of some waved hair (Figure 7). We see two tresses, hanging in dry air. The curl is a fair approximation of the "dress" the women are seeking when they visit their beauty shop or buy a home wave. Extended over a whole head it is what our average customer calls "a permanent wave." The curl which we are looking at, however, is entirely controlled by the Group One forces. To the eye and touch these two tresses equal each other in attractiveness, but actually one of them has not been permanently waved at all.

Figure 8 shows the same two tresses ten minutes after being introduced to a water-saturated atmosphere. The Group One forces have now given up their grip, and the Group Two forces have prevailed. The tress on the right has become straight, while the one on the left has gone into a series of wriggles. I am not going to try to guess which is the more attractive, but I can say with certainty that neight has much appeal to the customer.

These two tresses typify the "before-and-after" of modern permanent waving. Before having a permanent wave, our customer's pin curls sag off in the direction of the tress on the right. After having a permanent wave, her pin curls sag off to the shape on the left. In each case a gross deterioration of her coiffure occurs.

Now, if we could make our Group Two forces struggle to pull the hair into the shape shown on the preceding slide—the shape of a pin curl—out customer's hair would retain the configuration that she really desires. I do not think that this is impossible—we can put in tighter spirals or looser spirals. We can't put in this gradation of spirals by wrapping on a simple rod, but

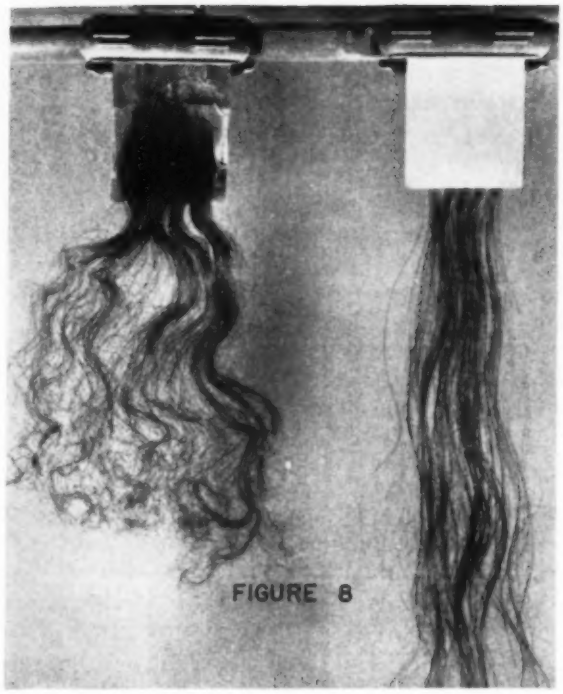

FIGURE 8

I suggest that there must be a wind which will yield a better approximation of dressed hair than any of us are now achieving.

I don't want you to infer that I think this is the only approach to an improved product—or even the best available. But in recent years many of our noblest experiments, carried out with the conviction that they would point a clear and profitable road to progress, gave results suggesting that our only logical course is to sit down and cry. I know our laboratories are not alone in this, and it is reassuring to think that there are still some attainable goals remaining, and even conceivable ways to get there.

## Uncertainty of Fair Trade

*(Continued from page 173)*

opinion to the effect that mere threatened violation of a fair trade law justifies the issuance of an injunction, that the violation itself being unfair competition, no other proof of irreparable injury is necessary. In spite of the facility with which other courts have reached this conclusion, it is difficult for this court to follow. The state fair trade acts provide that violations thereof are actionable only 'by any person damaged' and traditionally, before the issuance of an injunction, equity has required proof of pending irreparable injury. No reason is shown why that principle should be departed from here. Threatened irreparable injury must be proved before an injunction can be granted.

"On the surface it would appear that the plaintiff should benefit rather than suffer from defendants' price-cutting. Certainly more of its products would be sold. However, on closer analysis it becomes apparent that the plaintiff actually will suffer unless protected by in-

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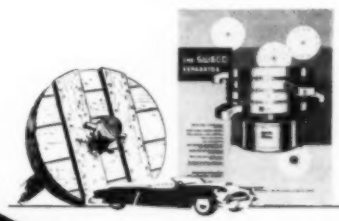

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●

His job as boss of the Senate represents a kind of demotion for Senator Taft. During the campaign, the Democrats attacked him as the General's superior officer. Now, his new job makes him out to be only a lieutenant.

●

Appointment of Senator Henry Cabot Lodge to the United Nations was an excellent choice by Ike. If, as the New England adage goes, "the Cabots talk only to the Lodges and the Lodges talk only to God," Henry may get the U.N. the Divine Help it has needed for so long.

●

Absence of a woman from the new Cabinet is really more surprising than disappointing, but the wisdom of omission is greater than first suspected. It figures this way: If the all-male Cabinet strikes out with its domestic program, Mme. Ovetta Culp Hobby, head of Federal Security, will receive all the gentlemen on the Home Relief line.

●

Plans of Congress to end the dreaded filibuster ended in failure for the most ironic of parliamentary reasons. Even those who agreed overdid things a little, talking to death the anti-filibuster proposals.

●

The Administration's conflict in giving priority to a trimming of taxes over a trimming of budget might have been resolved easier. The legislators might have trimmed some of the Philippics appearing in the Congressional Record, which started as a newspaper and wound up as a series of comic strips.

●

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junction. The affidavits in evidence taken from retail druggists show that unless the fair trade price on plaintiff's products is protected, the retail druggists will stop selling plaintiff's products and favor products of plaintiff's competitors. This threatened refusal on the part of retailers to sell plaintiff's products may not injure its good-will but it certainly will cripple its business, particularly if the retail dealer associations take a uniform position in the matter. Consequently, as long as state fair trade laws are safe from constitutional attack, the manufacturer is not safe from the wrath of the retailer."

It will be seen from the above points brought out by Judge Wright in his decision that the question of fair trade could swing either way when it gets to the Supreme Court. It is rather surprising that Judge Wright mentions the likelihood of concerted action on the part of retail associations in the boycotting of products of any manufacturer as he must realize that such action is a conspiracy in restraint of trade and is therefore illegal. However, perhaps the Judge is just facing facts in realizing that such action is likely to occur whether or not it is illegal.

In another action in which Sunbeam Corporation, makers of the famous food mixer, and an outstanding champion of fair trade, is involved with Masters, Inc., New York champions of free retail pricing, Sunbeam, last month, was denied a motion for dismissal of a suit for $75,000 brought by Masters against Sunbeam and eight of its distributors. Masters claims these damages were incurred through what it claims is Sunbeam's attempt to bar its distributors from supplying merchandise to retailers who refuse to sign Sunbeam fair trade contracts. Masters is not only attempting to beat Sunbeam in court, but it is also challenging the validity of the McGuire Act and the New York State Fair Trade Act.

In rejecting Sunbeam's motion for dismissal, Federal District Judge Gregory F. Noonan ruled that there are important questions of fact and law that should be tried. Sunbeam immediately applied for a rehearing of the motion, claiming that its fair trade acts are in conformity with both state and federal legislation, thus removing the basis for the Masters action. Masters hopes to show that fair trade legislation may not be constitutional because it may violate the Sherman Anti-Trust Act and what it calls "fundamental principles affecting trade and commerce between the states."

## The Medical Director and Sales Promotion

*(Continued from page 185)*

tion. If it does, the medical department is responsible for developing the essential clinical reports.

The publication of papers represents another of the most effective contributions a medical director can make to sales promotion. When the detail man tells a tired practitioner, "Doctor, our Rubadermis will usually cure psoriasis in three weeks," the invariable reply is, "Who says so?" And even if the claim is much less

blatant and much better grounded than the example I have cited, it had better be some medical author who said so.

It is easy to hand out free goods to clinical experimenters. It is not so easy to get reports from experimenters and it is really hard to get papers written by cooperators. But by keeping after them, by coaxing and cajoling, and in some cases by writing the paper himself, the medical director can usually get about one paper out of three or four successful studies.

The paper itself doesn't have to be signed by Dr. Bigwig. It doesn't have to be published in the Journal of the American Medical Association. The work reported doesn't even have to be done in the hallowed halls of the medical ivy league. If all these desiderata are attainable, fine. But there are other institutions, other investigators, other journals.

Let's look at some obvious facts and factors. Needs have been created by a patient's illness, his need for relief and his physician's need for an effective remedy. In our effort to transform the physician's need into a demand for our product, we must never forget the majesty of the printed word. A cooperator's report published in any respectable journal means something to the physician who is looking for a remedy that may help one of his patients. The circulation of the journal may be small and the readers few, but the advertising manager will see to it that many thousands of physicians will read one or two potent extracts. In getting publications for promotional aid, that's about all that counts.

Probably the most valuable contribution the medical director can make to sales promotion is the preparation of instructions for salesmen. He can put the salient points about a product in the shortest, easiest form, and I don't mean easiest to write but easiest to read, understand and remember.

In the Broadway play, "Death of a Salesman," there was a line which seems to me to sum up one of the most important factors in salesmenship: "And for a salesman, there is no rock bottom to life. He doesn't put a bolt to a nut, he don't tell you the law or give you medicine. He's a man way out there in the blue, riding on a smile and a shoeshine."

We all like to think our salesmen have a generous supply of that groundless courage and unreasoning optimism, that mysterious, almost magical quality—the ability to ingratiate, to impress, and to persuade. But so have the competitors' salesmen, and they may be loaded down with convincing facts and figures. So the medical director should give his salesmen something besides "a smile and a shoeshine" to ride on. He can help give him the best possible products, a thorough grounding in their character, their uses, their application and frequent reminders of these facts in new form.

Can the medical director look any further ahead, possibly to 1958 sales? I think he can, for he can bring to his research committee meetings a report of the trends in medical thought and practice. Trends will help determine the course of the company's research


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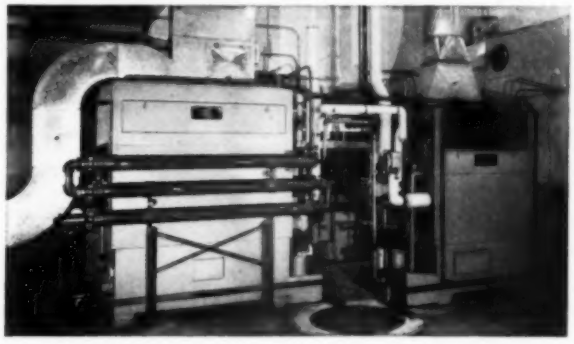

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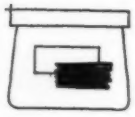

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and product development. And many a fruitful research project started in '53 will not result in a sale until '58.

## Drugs in Agriculture

(*Continued from page 171*)

sprouting and growth under inimical conditions. Pertinent, too, is work which showed that streptomycin, neomycin, bacitracin, chloromycetin, subtilin, and penicillin reduced the prevalence of halo blight when infected bean seeds were soaked in aqueous solutions of these antibiotics before planting.[8]

Quite a number of drugs that have proved their worth in treating human and animal ailments have also found application in the field of plant pathology. Among inorganic compounds, one may cite the use of several mercury salts; notably mercuric chloride and mercurous chloride. Though quite toxic, mercuric chloride or corrosive sublimate finds use in both medicine and plant disease control. As previously noted, it has also been used as a seed disinfectant and to control fungi attacking certain species of fine grasses.[9] Mercurous chloride or calomel is an old-time diuretic and was once the most popular of cathartics. As an agricultural material it is used largely as a fungicide. It has been used to some extent for the treatment of a fungus disease known as "dollar spot" in turfs, particularly in lawns, golf courses and the like.[10]

Copper sulfate, which has a number of applications in therapeutics, is especially valuable as a germicidal and fungicidal astringent. These effects are used both in the treatment of athlete's foot in humans and foot-rot in sheep. These properties also account for the use of this copper compound as a major ingredient of Bordeaux mixture, one of agriculture's most useful fungicidal preparations. The discovery of this combination is said[9] to have opened up a new era of plant disease control.

Similarly, elemental sulfur and several of its inorganic compounds are among the most widely used agricultural fungicides. Employed as a dust against powdery mildew and other plant diseases; the greater proportion of this material is used in the fruit-growing countries. Of course, sulfur is one of the most important agents for the treatment of various skin conditions. Zinc oxide, which is also used in dermatologic preparations, is employed to some extent for seed treatment and control of damping-off.[11]

Long familiar as simple therapeutic adjuncts, borax and borates find use in agricultural practice as soil sterilants. Borax is also used to supply boron, a plant nutrient.[7]

Formaldehyde, one of the simpler organic compounds, has a well-established place in medicine as a fungicide and germicide, and as a detoxifying agent in the preparation of toxoids. Its antifungal and antibacterial effects account for the wide use of formaldehyde on the farm for disinfecting seed, tubers, and bulbs, and also for treating soil for destroying parasitic fungi.

Urea, another simple organic compound, is prescribed

by physicians as a diuretic. Arborists and nurserymen employ solutions of urea in foliage feeding sprays to supply nitrogen to trees and shrubs.

Of course, various other, more complex organic compounds are used both in medicine and in plant pathology. Colchicine is a frequently cited example of such a compound. In medicine, it serves as an aid in the treatment of gout. In agriculture, colchicine is used as a research tool for inducing polyploidy (i.e. chromosome multiplication in plants). It is therefore an important and valuable tool to the plant breeder.[10]

Vitamin B (thiamine), so essential to the well-being of humans and animals, also produces a favorable response with some plants. The sorrel plant, for example, requires thiamine for growth.[12] Compounds related to vitamin K are also useful in agriculture. For instance, 2,3-dichloro-1,4-naphthoquinone has proved to be toxic to seed-borne fungi and is also used to prevent damping-off of seedlings.[9] According to Sproston,[13] this compound is being used extensively in the Northeast as a fungicide for the control of apple scab.

Glycerine, which finds many uses in medicine and pharmacy, also has a number of interesting applications in agriculture. Glycerine, for example, plays a valuable role in vehicles for colchicine,[14] herbicides,[15] and plant growth regulators.[16] As shown by Du Puis,[17] glycerine itself is capable of stimulating the growth of such plants as cabbage, tomato and narcissus. The plastisizing action of glyerine has been used to advantage in the preparation of fungicidal coatings for seeds.[18] The coating material and carrier on the seeds consists of methyl cellulose, a material which is finding many new uses in medicine and pharmaceutical manufacture.

Frear[9] calls attention to the tremendous amount of work being done with the quaternary ammonium compounds which have been found to possess considerable toxicity to lower forms of life, particularly the bacteria and fungi, without being highly toxic to higher animals. Although most of the investigations on these compounds have been directed toward the medical and sanitation field, the agricultural aspects have not been overlooked. Thus, lauryl isoquinolium bromide and lauryl nicotinium bromide have been found to be effective as foliage sprays.

The organic sequestering agents are another group of compounds that have attracted attention during recent years. A number of reports indicate that substances like ethylenediamine tetra acetic acid (EDTA), in addition to their varied industrial uses, may have important applications in both medicine and agriculture. Recent studies reported by Alexander and Walsh[19] point to the use of EDTA as a means of enabling plants to assimilate minerals, notably iron, in which they are deficient.

New organic chemicals will undoubtedly continue to be developed for use in medicine and plant pathology. However, considerable interest is now being focused on the agricultural possibilities of the antibiotics. With their outstanding success in combatting human and animal infections, it is being demonstrated that these


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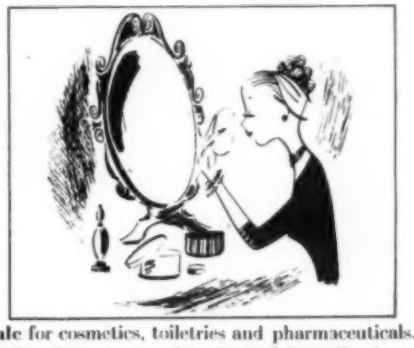

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antibacterial agents are likewise effective against some plant diseases.

Indeed, as pointed out by Leben,[20] antibiotics have been of interest to plant pathologists for some time. "As a matter of fact," says he, "one of the first to be crystallized, gliotoxin, was first studied because of its implication in plant pathology. Since the realization of the remarkable powers of penicillin there has been a real increase in interests in using antibiotics to control plant diseases, and there have been a number of interesting investigations." Leben notes that, while successes have been reported, most of the research has been done under controlled conditions and the work has not yet resulted in large scale commercial applications. Nonetheless, it is his view that the findings to date have led most plant pathologists to consider antibiotics as of great interest and potentially important for plant disease control. The fact that these agents act selectively and in great dilution are two considerations which are of major importance to these workers.

In one of the earliest reports on the use of an antibiotic to control plant diseases, Brown and Boyle[21] described the use of crude penicillin for the treatment of crown gall, a tree disease that is particularly destructive in the Southwest. As a result of these findings, which were reported in 1944, it was felt that penicillin should prove valuable in treating galls on nursery stock as well as on set trees and other plants in which the gall is limited to the crown and aerial parts.

In further studies, reported in 1948, Brown[22] found that living gall cells as well as the bacterial cause of the disease were killed by the application of penicillin and streptomycin. A year later, following tests with a number of antibacterial substances in the treatment of crown gall, de Ropp[23] found that penicillin was much less effective than aureomycin, chloromycetin, streptomycin and streptothricin against the inciting organism.

As previously noted, other potential penicillin uses have been studied by plant pathologists. These workers have also shown considerable interest in the applications of streptomycin, one of the most useful of the antibiotics derived from soil bacteria of the important actinomycetes species. Thus, the antibiotic has been found effective for eliminating the responsible organism from cankers on plum twigs.[24] Employed in a protective spray, streptomycin prevented the development of leaf spot on tomato plants. When used as a soak for tomato seeds, a solution of the antibiotic causes the plants from these seeds to be free from canker.[25]

Similarly, in a study of sugar beet root rot, McKeen[26] reported that streptomycin showed good protection against the rots. Smith[27] also reported encouraging results with bean seeds treated with this antibiotic for the prevention of seed-borne bacterial blight. More recently, Mitchell and his colleagues[4] reported that primary leaves of bean plants inoculated with the halo blight organism failed to develop the disease when a minute amount of streptomycin sulfate was placed on the stems prior to the inoculation. Tests being carried out in four states by the Department of Agriculture

indicate that the antibiotic can almost eliminate bean blight. It was also discovered that the cost may not be as prohibitive as originally feared, since crude forms of streptomycin are as effective as the pure substance. Moreover, it was found that the drug may be applied as a dust spray, making the application less costly and more convenient for the farmer. Other tests showed that streptomycin minimizes damp-rot on leafy vegetables, thereby lengthening their shelf-life.[28]

Terramycin, so valuable in the treatment of infectious diseases of humans and animals, may play a comparable role with certain plant diseases. For instance, limited experiments with this antibiotic have shown that it seems to diminish leaf-dropping on peach trees. It is suggested[28] that terramycin will perhaps control the bacterial blight that has virtually wiped out the pear orchards in the East.

More recent work points to the probability that, as in the case of animals, certain antibiotics may improve plant growth. The preliminary experiments made by Nickell,[29] which have already attracted world-wide attention suggest the possibility that these agents might have practical application in the stimulation of plant growth as well as in the control of plant diseases. His studies indicate that under proper conditions, antibiotics can stimulate the growth of plant tissues, plant organs and whole plants.

In one phase of his three-part study, Nickell studied the effects of terramycin on the germination and subsequent growth of sorell seeds and sweet corn seeds. In this experiment a group of 49 corn seeds was planted in each of two greenhouse flats; one serving as the control. At the end of four weeks the plants were removed from the soil and it was found that of the 49 seeds in the terramycin-treated flat, 20 had germinated and formed a plant, while only 12 had germinated in the control flat. The total weight of plant tissue above ground was 45 Gm. from the treated flat and 23 Gm. from the control. The average height of the terramycin-treated plants was 17.45 inches as compared with 14 inches for the untreated plants. The tests with sorrel, showed that even when terramycin treatment is discontinued at an early stage, the growth gains continue. At 46 days, a flat of sorrel given antibiotic averaged 3.8 inches higher than the untreated plants of the same age, and they had more leaves.

These observations suggest that antibiotics are capable of speeding up the growth of plant life so that maturity is reached in a shorter growing period. This, obviously, could be a factor of great economic importance in short season areas and in parts of the world which suffer drought conditions at definite periods of the year.

As with human and animals ills, the use of various antibiotics for treating plant diseases is subject to certain limitations. These include such factors as cost, possible toxicity, and specificity of action. In considering the first factor, Anderson and Gottlieb[25] remark, many plant pathologists realize that the high cost of antibiotics, while not limiting their use for the saving

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of human lives, would exclude their employment in the control of plant diseases, especially when many synthetic agents were available.

However, cost considerations may be brought into line by the fact that less pure forms may prove effective and by the fact that the antibiotics are often effective in high dilutions. Sometimes only a few parts per million may suffice to prevent or overcome a plant disease. Then, too, one need only consider the history of penicillin production to realize that the pharmaceutical industry has the know-how and the facilities to bring down costs when there is a large enough demand for the product.

Aside from phytotoxic considerations, the question of toxicity is largely concerned with the effects, if any, of antibiotics remaining on edible plants. This, of course, is an important consideration, and one that requires more study. In this connection it should be remembered that antibiotics are generally used in very low concentrations. Also pertinent, is Smith's[30] report that safe and effective results were obtained when fresh spinach was dipped in dilute streptomycin solutions to prevent bacterial soft rot of the packaged vegetable. Of related interest is Waksman's[31] observation that by washing lettuce in a very dilute solution of streptomycin, it can be kept fresh and free of discoloration.

As shown by tests in which various antibiotics were ineffective against certain plant diseases,[25] it is evident that these antibacterial agents display a definite degree of selectivity in their action. In considering this factor from the viewpoint of a plant pathologist, Leben[20] makes the significant observation that, "Some of the unsuccessful attempts to use antibiotics to control plant diseases have indicated that we need antibiotics particularly adopted for use in plant pathology—especially those that inhibit fungi and viruses. Most of the antibiotics that have been used in plant disease control, to date, have been developed for medical purposes and are not particularly suited for our uses. I would guess that the drug industry, with its vast experience and resources in antibiotic work, is in a very good position to make significant advances in this new and . . . exciting field."

Leben, of course, is quite right. The pharmaceutical industry has developed the techniques and equipment for evaluating the potential of antibiotic substances. Much of this procedure could be adapted to the screening and testing of antibiotics suitable for use against plant diseases. No doubt a good deal of preliminary work has already been done as a result of studies to find antibacterial agents against human and animal infections. Indeed, the drug industry is already working in this direction, as witness the work of Nickell at the laboratories of Chas. Pfizer & Co.

The search for antibiotics suitable for treating plant disease is going on in many laboratories. One indication of the wide interest in the value of antibiotics as fungicides is shown in the fact that 12 papers dealing with this subject were presented at the September, 1952,

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The importance of such research is further emphasized by Anderson and Gottlieb[25] who state that the stimulus to further antibiotic research in plant pathology is the occurrence of certain types of diseases which cannot be controlled by usual organic and inorganic fungicides. Among such diseases are those caused by bacteria on leaves or stems, and root rots or seed decays caused by soil-borne bacteria and fungi. In their survey of plant disease control with antibiotics, these plant pathologists call attention not only to the familiar antibacterial agents but also summarize the data with regard to antibiotics useful in plant disease control. Among the latter are: viridin, antimycin, actidione, musarin, alternaric acid, subtilin, endomycin, hexalin, fungocin, toximycin, antibiotic XG, and griseofulvin.

Some of these agents hold considerable promise but to date, as far as can be determined, only one has been produced commercially. Known as Acti-dione Ferrated, this antifungal antibiotic is used for the control of turf diseases such as dollar spot, brown patch, snow mold and melting-out disease.[32] It is particularly noteworthy that this new type of product is being made available by one of the larger pharmaceutical organizations, the Upjohn Company, of Kalamazoo. This is as it should be, because organizations of this kind are especially well set up to provide these antibiotic preparations.

The pharmaceutical industry will, no doubt, assume a similar role in the production of drugs and other agents to prevent or treat diseases of plants or stimulate their growth. Two phases of research that come to mind in this connection is a better understanding of the role played by enzymes in plant processes and the possibility of immunizing plants against various diseases. By helping to solve these and other problems, the pharmaceutical industry will not only contribute to man's search for better health and longevity, but also will help to insure for him the great bounty and beauty of nature.

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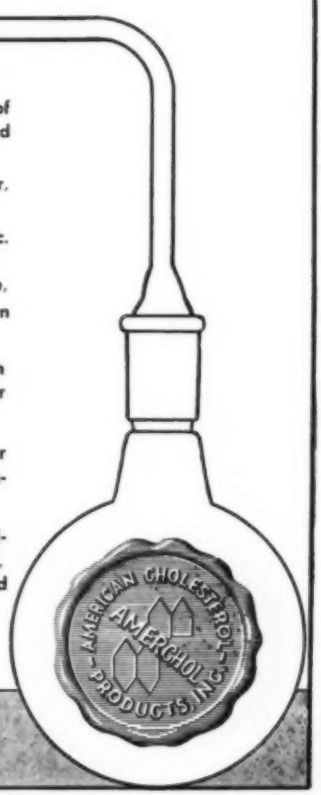


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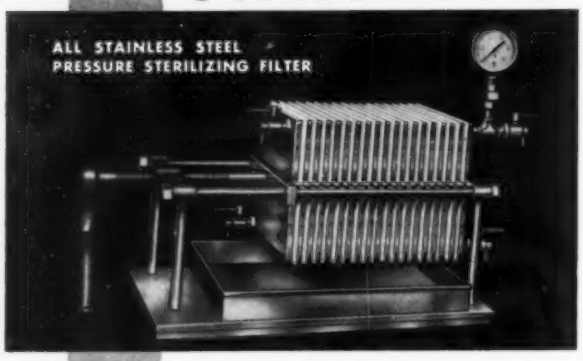


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# Air Conditioning in Pharmaceutical Manufacture

(*Continued from page 181*)

having an air capacity of 12,500 cfm each, are also pictured. Standard chilled water coils cool and dehumidify the air to approximately 40 per cent R.H. in the Upjohn plant operations. Where humidity must be further reduced for supply to special process areas, as in this instance of the rotary tablet machine room, these lithium chloride-base, absorption-type, dehumidifying units are used.

## Examples of Dehumidifying Applications

As an example of a dehumidifying application of this equipment, the two 12,500 cfm units treat a total of 24,950 cfm of air from maximum entering conditions of 70° F., 100 grains/lb to 32 grains/lb. All but 14,270 cfm of this air is delivered directly to a drug powder-handling area, with no further air treatment. The remaining 14,270 cfm is passed through another dehumidifier, entering at 82.5° F. and 32 grains/lb, leaving at 21 grains/lb. Then this air, too, is supplied to one of the powder processing spaces.

In another instance, this dehumidifying equipment conditions 3480 cfm of air from 77° F., 51 grains/lb to 73° F., 18 grains/lb, which represents a relative humidity of 15 per cent. A third dehydrating line effects a humidity reduction from 57 grains/lb at 82.5° F. to 12 grains/lb for 3050 cfm of air. And a fourth arrangement finds 2700 cfm of fresh outside air mixing with 1470 cfm of return air, this 4170 cfm mixture at conditions of 68° F. and 57 grains/lb when supplied to the dehumidifier and leaving with a moisture content of only 13 grains/lb.

## Variety of Air Conditicns Required

As is noted, even the air requirements for the drug powder rooms are not consistent, varying from area to area, dependent upon the exact nature of the process, room size, hygroscopic qualities of the product, etc. Hence, separate air conditioning systems are usually mandatory for each.

This absorbent-type dehumidifying equipment operates on much the same principle as a conventional air washer. Air is brought into contact with the lithium chloride-base solution, and, at the same time, both pass over a set of cooling coils. In most instances in Upjohn's operations, the cooling medium is 54° F. well water.

## Operation of Dehumidifying Equipment

These cooling coils primarily control the absorbent temperature, for the moisture-holding capacity of the absorbent increases as its temperature is lowered. The amount of air-drying accomplished is regulated through automatic controls to determine the rate of flow of the cooling medium and the density of the solution.

As the absorbent becomes moisture-laden, a small quantity is intermittently passed over low pressure

(30 psig) steam coils in another unit termed the regenerator. Here the excess moisture in solution is driven off and exhausted to the atmosphere by a scavenging air stream. The regenerated absorbent is then returned to the air washer at full strength. This absorbent cycle operates automatically, and the dehumidifying action is continuous. No manual control is required. In addition, none of the absorbent is carried-over with the leaving air stream, thereby maintaining non-contaminated areas in a pharmaceutical plant as sterile as possible, an essential condition in drug processing operations.

### Drying of Sugar-Coated Tablet

As specific examples of air conditioning requirements for Upjohn products, consider the sugar-coated tablet containing nicotinic acid, ascorbic acid and riboflavin. In the rotary coating pans during the polishing operation, these pills contribute a moisture load of 1.5 lb/hr/pan. The dehumidifier supplying these pans delivers air at 72° F., 14 grains/lb to a heating coil. Here the air temperature is increased to 90° F., so that the 400 cfm of air into each pan is at a relative humidity of 6 per cent.

A similar situation exists for the sugar-coated tablet drying ovens, where low temperatures are mandatory so as not to harm the product. In low temperature drying, low air humidities decrease the required drying time substantially. The sugar-coated tablet product moisture load is but 0.15 lb/hr/oven. Leaving the Kathabar unit, the air, at conditions of 80° F. and 14 grains/lb, passes over a heating coil to assume a delivery temperature of 100° F. at 4.5 per cent R.H. Approximately 200 cfm of air is required for each oven.

### "Ferrated Liver" and "Solu-B"

For the "Ferrated Liver" powder mixing and dark compression rooms, the air requirements are identical. "Ferrated Liver" concentrate embodies powdered extract of liver plus other vitamins. To hold the two areas at 90° F. and 10 per cent R.H. (21 grains/lb), air is delivered directly from the dehumidifiers at conditions of 72° F., 16 grains/lb.

Last, Upjohn's "Solu-B" (soluble vitamin B compound) packaging area, where the material is automatically filled into sterile vials, is supplied with 12 grain/lb air. Five thousand cfm of air is handled by the Kathabar unit serving this room, reducing the air moisture content from an entering condition of 30 grains/lb at 83° F. The equipment supplying air to this and other "Solu-B" processing areas is pictured.

Cited here have been a few examples of the air conditioning requirements deemed necessary by Upjohn for optimum production results regarding their powder and tablet manufacture. This, as intimated earlier, is not the exclusive use of air conditioning in the new Portage Road plant, nor is this summary even inclusive of all the dry product processing requirements. However, the importance of a variety of stringent, low humidity, air conditions to assist in the production of finest quality drugs cannot be overstressed.


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## Drug Metabolism

*(Continued from page 177)*

dose of the drug actually lasts from three to six months.

Another example of localization is atabrine. The reason why atabrine lasts such a long time in the body compared to quinine, which is quite unstable, is that atabrine forms a reversible complex to the nuclear proteins of the various tissues, and this, of course, constitutes a depot for the drug where it is absorbed slowly. There are probably many other types of depots in the body, which are presently under study.

The fourth thing regulates the plasma concentration. It is the rate of biotransformation, the rate at which the drug is metabolized in the body. Some drugs are actually inherently stable but, as I have pointed out, most drugs are stable within the body not because of inherent stability but simply because they are localized and protected from the enzyme system.

Sometimes, depending on the type of drug action you may want, it is desirable to have a drug with a longer range of action. For instance, it is desirable to have a narcotic or analgesic last a long time in the relief of pain, and, as we know, unfortunately, practically all our analgesics last only three to four hours, requiring constant and repeated administration. At other times, we require a short duration of action in a drug. For instance, it is very desirable, with intravenous barbiturates, that the duration of action be short. As it happens, both of these particular problems are present and important problems today. We would like to get a long-acting analgesic and a short-acting barbiturate.

Unfortunately, it is quite difficult to predict the stability of a drug in the body since, at the present moment, little information is available which relates chemical constitution to rate of biotransformation. One of the major difficulties in this respect lies in the fact that various animal species differ markedly from man in the rate at which they metabolize a therapeutic agent, and this constitutes no mean hindrance to the screening of drugs in general, for an animal species has to be used as a preliminary to trial in man. I think a few examples of this might be quite pertinent.

As we know, Demerol is a very useful analgesic in man, and, in man, it metabolizes at the rate of about 20 per cent an hour, so that a single dose lasts in the neighborhood of around three to four hours. However, when the same drug is administered to dogs, you can pour the drug into the dogs in enormous quantities and elicit only minimal pharmacologic effect. When given in concentrations of magnitude, it goes down at enormous rates of speed, approximately 90 per cent in the first hour. This is probably an explanation of why it is extremely difficult to produce either tolerance or addiction, not only to demerol but also, as it happens, to certain other analgesics which behave similarly in the dog.

Of course, in the screening of analgesics, this raises

the question of how many really useful analgesics might have been discarded because they showed minimal effects in a particular animal species in which we have been able to test them, not because they have really lacked activity but merely because they have been transformed at too high a rate of speed, showing the effect, where they might have been satisfactory in man.

Another example is Tromexan. As you know, Tromexan has been introduced lately as a substitute for dicumarol, because of the fact that it metabolizes rapidly in the body, and therefore, on the theory that one runs into bleeding difficulties, one only has to discontinue dosage and the drug rapidly leaves the body and therefore the patient rapidly recovers. As you know, the converse is true with dicumarol. In man the rate of metabolism is rapid, approximately 40 per cent an hour. Interestingly enough, in the rabbit, where this drug was first tested, I believe, the rate of metabolism happens to be about the same as it is in man. This happens to be a very fortunate coincidence, because, actually, chemically, Tromexan is handled entirely differently by the rabbit than it is by man. It is metabolized by entirely different chemical processes. It might very well have turned out to be a pure coincidence that Tromexan was ever introduced on the market at all, because if the drug had ever been tested in dogs, it would never even have been considered, because it metabolizes only 4 or 5 per cent an hour, compared to the relatively high rate of metabolism in man.

Finally, one further example along this line is the barbiturates. We are actively looking at the present moment for a short-acting barbiturate, one which is really unstable in the body. We have found more examples of species difference in barbiturates than in almost any other types of drug that we have studied, and I think one example here without going into the chemical structure, will suffice.

In collaboration with Squibb, a number of drugs were developed, and this one I simply called—well, it is a cyclohexenylethyl derivative of barbituric acid. These compounds were screened in dogs. When given to dogs in large doses, they produced a potent and deep anesthesia, and no matter how long the dogs were kept under anesthesia by continuous infusion, at the end of the anesthesia, in a very few minutes the dog was up and walking around, with no apparent after-effects. I measured five levels and it was found that the drug metabolized at an enormous rate of speed. Very hopefully, thinking that we had the answer, this drug was given to humans, and it was found to be one of the most stable barbiturates that we have ever played with.

One further example of species difference in barbiturates may be pointed out: that in man, the higher barbiturates are all metabolized more rapidly than they are often in analogs. In dogs, the exact reverse is true.

Of course, this brings up the question of whether or not, in many cases, we do too much animal testing. It brings up the question of whether too much work is done on dogs, without somewhere along the line getting some idea of whether the compound is going to be of


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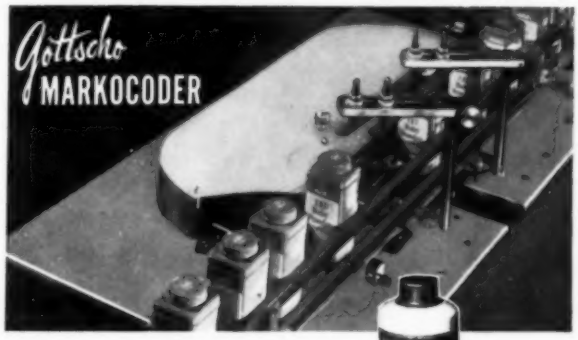


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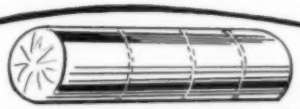

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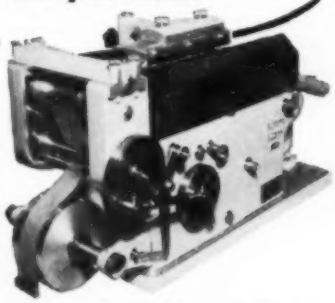

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any use in man at all, and whether or not the compound may not have to be discarded because of this property of too rapid or too slow metabolic transformation. I think it is worthwhile to bear in mind that in many cases, it is obvious that we do too much animal experimentation before preliminary experiment is made in man.

I think there may be a possible way out of this difficulty of screening. Mr. Axelrod in our department has been doing some work on the metabolism of drugs in different strains of animals. The work is very simple. We are working with antipyrine. Antipyrine is an analgesic which is metabolized in the body by oxidation to form hydroxyl antipyrine, an inactive compound. In man, this occurs at a relatively slow rate, 7 or 8 per cent an hour. In dogs, rabbits and the ordinary stock rate, this occurs at about 50 per cent an hour—a considerable species difference. We measured the rate of metabolism in antipyrine in eight different inbred strains of rats, and found one strain of rats that does not metabolize the drug at all, one strain of rat which metabolizes just slightly, and the other strains metabolize it quite rapidly. This brings up the possibility that one may find a particular strain of a particular kind of animal, which, for a certain class of drugs, metabolizes and handles that drug most closely to man. This does not seem an impossible situation, because in spite of the hundreds of thousands of potential drugs, drugs are metabolized by only a few biochemical mechanisms in the body. I would be surprised if there were more than seven or eight biochemical methods which would define all the different ways or most of the ways in which drugs will metabolize, so that for a particular type of drug, there is usually a common mechanism of metabolism, and if one can find the animal species that most nearly approximates the human in that regard, one is in a much better position to interpret the results in that strain directly to man as far as screening purposes are concerned.

Before leaving the metabolism of drugs, I would like to say one word about the role of liver in the metabolism of drugs. We read in the pharmacology books, for a good percentage of our drugs, the note is always made that drugs are metabolized in the liver, which is true. Therefore, we say that since drugs are metabolized in the liver, people with liver disease present a therapeutic problem, and one should be careful. I do not think that is true, except in a few isolated cases. Some work by Dr. Burns in our department shows that liver disease, no matter how badly the liver is damaged, does not mean that the individual lacks the enzyme to metabolize drugs. They may be able to metabolize drugs just as readily as normals. We have found no exceptions to this rule.

That is not to say that in some cases, people with liver disease are not a poor risk for a drug. For instance, people with liver disease are extremely sensitive to the drug, dicumarol. This is not because these particular individuals metabolize the drug rapidly, but merely because their livers have such a poor capacity to manu-

facture prothrombin that it does not take much dicumarol to knock out the mechanism. But I do believe that we will ultimately find that with most drugs, all the precautions about dealing with implications of liver disease are definitely exaggerated.

This brings me up to a few words about the relationship between the chemical constitution of drugs and their therapeutic activity. The medicinal chemists and the pharmacologists, in the search for new drugs, are constantly concerned with this relationship. There are volumes written about it. But I want to point out that a great deal of caution must be exerted in the interpretation of these relationships. These studies have been done in several ways. One way of doing them is to measure the activity of a drug on an isolated organ tissue. Well, it must be remembered, when reading such tables, that these tables do not take into consideration whether the drug is well absorbed, whether it is rapidly metabolized, whether it is localized, whether it is rapidly or slowly excreted, so it is unknown how these relationships will apply to an intact animal.

On the other hand, if these relationships are measured directly in the intact animal, again one must look at them with a great deal of caution because, first of all, one must consider the possibility of species differences; that these relationships may not apply to man. Secondly, one must remember that if there is a chemical change in a drug which, in the intact animal, might have given the answer, "No activity," it might have been inactive not because it was not inherently active but because the change made the drug so unstable in the body that it disappeared too rapidly to give an effect. Therefore, one may have discarded a very promising chemical approach merely because one was caught in the trap of making a change that was also unstable. It might have been prevented if the fact were known.

I think it might be a good idea to give an example, or a few examples, of how definitive knowledge of the fate of the drug in the body can be applied to its rational therapeutic use. As an example of a good drug that was almost discarded because of incorrect usage, I can think of none better than the old story of the antimalarial, Atabrine. At the outbreak of the last war, we had relatively little further supply of quinine and a substitute had to be found. The substitute was already available, and that substitute was Atabrine. But Atabrine was used only as a compromise because it was known at that time that Atabrine was not as good as quinine, at least from the way it was used.

It was used quite widely by the Army, and after a few months, the Army suspended all purchases of Atabrine, for the following reasons: (1) When used as a suppressive to prevent the disease, the drug was toxic. It produced a considerable amount of toxicity, nausea, and vomiting, especially in aviators. (2) When used in suppressive therapy, the drug had a poor degree of effectiveness in preventing the disease from coming on. (3) When used in the acute phases of the disease, it had a very slow onset of action.


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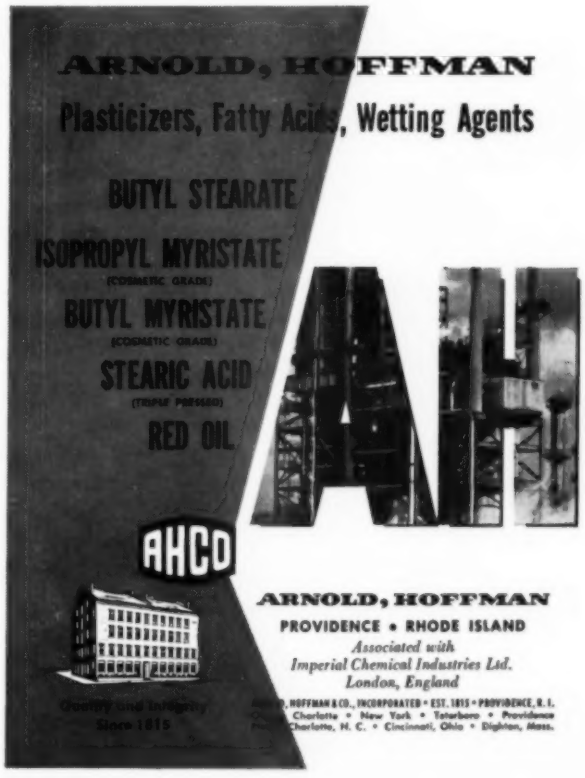

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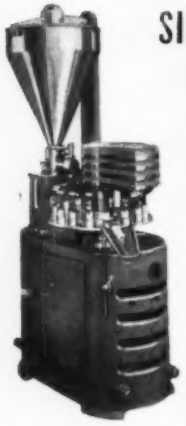

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A very searching inquiry was made by a number of groups into the pharmacology of Atabrine, and some of the results I am going to describe today were found by the group under he direction of Dr. Shanley at Goldwater Memorial Hospital. I will go over them very quickly, giving you only the highlights.

A dose of 10 milligrams was given to a dog intravenously, and four hours later, the dog was sacrificed and the concentrations of various tissues were measured. We noted a very peculiar thing. Liver has 2000 times the concentration of plasma, and muscle, the lowest organ in the body, has almost 200 times the concentration of plasma. In a dog that had repeated dosages of the drug for fourteen days, we noted that the difference was even more pronounced. Here, we had the extraordinary situation where the liver had approximately 22,000 times the concentration of the plasma, and muscle had approximately 1000 times, so we have here an extraordinary capacity of the tissues in the body to soak up Atabrine.

What does this mean in terms of therapy? Atabrine, as it was used before this time, was given in 100 milligrams three times a day. Now, how did they pick that dosage? Well, it was simply picked by analogy, because quinine had been given three times a day, although in larger doses. Let's see what happens to the plasma levels.

If you give one dose of 100 milligrams, the tissue soaks up by far the tremendous fraction of the drug, and the resulting plasma concentration is very low. When you give the second dose, more is soaked up, and the plasma concentration rises. And so you go on, day after day, with the tissues soaking up the drug and the plasma concentration rising, until finally the plasma concentration is high enough so that it metabolizes as rapidly as it is given.

It was independently discovered that in the area where the disease was endemic, it took a plasma concentration of approximately 30 micrograms per liter to stop the disease cold. Well, here we see, on this dosage regime, it took three days to get to that level. That accounted for its slow onset of action; it accounted for the extraordinary number of deaths from falciparum malaria, where, in the period of three days, the vessels in the brain could be clogged with plasmodium, and of course, the slow onset of action occupied a number of beds in the hospitals that should have been used for other purposes.

Once the diagnosis was made as to what was wrong with the way the drug was administered, the cure was easy. Get the drug concentration up higher than where you wanted it as fast as possible, either by giving large doses of the drug orally or intramuscularly, and then maintain it at 100 milligrams three times per day, in the cases where the drug was given suppressively, in order to prevent the disease from occurring. Even though the subjects were bitten by mosquitoes, the drug was given in dosages of 400 milligrams a week, 200 milligrams in a single dose. This dose was not only ineffective but caused nausea and vomiting. Again

independently, it was found that you had to achieve a concentration of approximately 15 micrograms per liter in order to protect the subject against the onset of the disease. This dosage regimen of 200 milligrams twice a week only produced a concentration which averaged 10 or 11 micrograms per liter, so that a considerable number of the subjects were not protected.

Then the problem seemed rather simple; that is, give just enough drug to raise the level to 15; in other words, decrease it from 400 milligrams a week to 600. But how would this decrease toxicity? If anything, it would increase it. Well, the toxicity was found to be a local irritation of the gastrointestinal system by the relatively large dose of 200 milligrams a day, so simply by raising the dosage to 600 milligrams a week, never giving more than 100 milligrams at a time, the whole problem of dosing with Atabrine was solved, so much so that by January 1944, malaria as a tactical or strategic problem had practically disappeared.

Therefore, here we see Atabrine, a drug utilized on a large scale in the 1930's, studied extensively but casually in the field by experts in 1940, which had acquired such a bad reputation during its initial use in World War II that in the summer of 1942, the purchase of the compound was suspended by the armed forces, or at least the compound was too toxic and too ineffectual to satisfy the needs: yet, only a year later, it was shown to be superior to quinine and, in fact, had such beneficial results that a disadvantage would accrue were it replaced by quinine. Of course, it never has been. Other drugs since then have been synthesized, which are also like Atabrine.

I would like to say a few words at this time about some work which is still in progress, and which is very nondefinitive from what I am going to say. Butazolidin is a new analgesic which is exciting because it has certain properties similar to cortisone and ACTH. It exerts a profound anti-inflammatory effect clinically in rheumatoid arthritis, in gout, in rheumatic fever, and in peritendinitis, and its structure is similar in many respects to that of antipyrine. However, the differences in the structure give it an entirely different physiological distribution in the body.

Antipyrine, as a matter of fact, is not localized in any tissues but distributes entirely throughout the body of the organism. Butazolidin is tremendously localized, especially in the plasma protein, so much so that when you give a single dose of butazolidin, a large fraction of the drug never leaves the plasma. It is in the plasma in enormous concentration. Secondly, because of this finding on the proteins, it is protected against metabolism, so that the drug metabolizes only 10 to 15 per cent a day—an extremely important point when one realizes that this means that one can treat a patient with rheumatoid arthritis on doses of the order of 4 to 6 hundred milligrams per day or, if necessary, give the drug only every other day in a slightly larger dose. We do not get into the problems that you get, say, with salicylates in rheumatic fever, where you have to give these horrendous doses.


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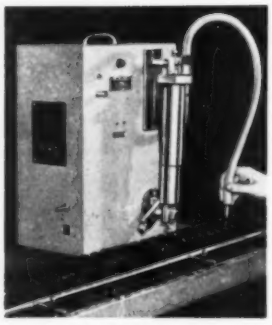

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It is interesting and, I think, quite illuminating that Butazolidin was discovered to be an anti-inflammatory agent not as the result of animal experiments but as the result of human trial. It was never meant in the beginning to be an anti-inflammatory agent, and I think we can understand why it has been so difficult ever to find out in animals that it was an anti-inflammatory agent.

The drug metabolizes quite slowly in man. In dogs, in rats, in guinea pigs, in rabbits, it metabolizes at a high rate of speed, in spite of the protection of the plasma protein. One can show anti-inflammatory effects in animals only by giving enormous doses, far beyond anything that you would ever give therapeutically, and it is because of this rapid metabolism of the drug.

Of course, this is rather disturbing, because this drug is a landmark in medicine. It means you can get away from cortisone and ACTH in getting an anti-inflammatory effect. There are a lot of things that are wrong about Butazolidin. It has a lot of side effects; it retains sodium; it may produce nausea and vomiting; you get a certain number of skin eruptions; you get occasionally agranulocytosis. But in spite of all these side effects, there is no doubt about it that the positive side of it is overwhelming. But there is room for a better compound than butazolidin, and how we are going to screen it is going to be a problem.

There are a few things I want to say in passing about what we have learned about dosage. There was a preparation of Butazolidin which was an intramuscular preparation. It could be given intramuscularly when a rapid effect was desired. Actually, with plasma levels, after intramuscular and oral administration were compared, it was found that you got a peak plasma level after one or two hours with oral administration but you did not get your deep plasma levels until after six or eight hours after intramuscular. The reason for that, of course, is all tied up with the fact that it is so highly bound and localized in the tissues that you are forming a nice site where it accumulates and is very slowly let into the system, even though it is given intramuscularly, so the intramuscular preparation has been dropped.

There is one mystery about this drug which we have not yet been able to solve. You seem to get your therapeutic effects in rheumatoid arthritis at levels of about 100 micrograms per ml. In certain cases where the therapeutic effect does not seem to be sufficient, one actually thinks of raising the dosage; so you raise the dosage and what happens? You do not raise the plasma level. For instance, we have had patients running 800-milligram doses per day with a plasma level of, say, 100. You increase the dosage to 1800 milligrams, and the plasma level goes up to 110, an increase of 10 or 15 per cent. It is not a case of absorption, because the drug is completely absorbed. It is not a case of excretion, because the drug is not even excreted. There is only one explanation; that is, in the larger doses, the drug must be more rapidly metabolized. Of course, this seems to make no sense in the cases where we think

it can be explained, but the thing that excites us is what this finding may mean in terms of therapy.

If one wants to stretch a point at this stage, it is obvious that there is nothing to be gained, it would seem, by raising the dosage. One gets up to a dosage regime of 600 to 800 milligrams where the plasma level is not raised. This has been borne out clinically, because once you get to 600 or 800 milligrams and you do not get a sufficient effect in certain cases, you never seem to increase the effect by increasing the dosage. On the other hand, there is the possibility that you may be increasing the toxicity by giving the larger doses, and that many of the toxic manifestations might be merely a question of overdosage.

As my final example, I would like to discuss an instance of how the study of the fate of a drug or of a class of drugs may define the limitations of this class of drugs and therefore may suggest methods of finding better drugs. The studies we have made have been with thiopental, as it is called, or Pentothal.

As you know, an anesthetic is limited in its duration of action in the body by the rate at which it gets across the respiratory epithelium and is excreted by the organism. On the other hand, an intravenously administered barbiturate has been thought to be limited in its duration of action largely by the rate of its metabolic transformation. Barbiturates, prior to pentothal or thiopental, were too long lasting to be generally acceptable in general anesthesia. Pentothal has been described as being short acting in that it produces anesthesia of only a short duration following the administration—and this is important—of a small dose. However, if a patient is maintained under prolonged anesthesia by successive injections of Pentothal, the duration of subsequent continuing narcosis is also prolonged. It no longer behaves as an ultra-short-acting drug. This characteristic of thiopental was not understood. It has been ascribed by some to the production and accumulation in the body of less active metabolic transformation products which have a long duration of action. This characteristic of drug action is one of its chief limitations and has restricted its unsupplemented use, as a rule, to surgical and obstetrical procedures of relatively short duration.

I think a study of the physiological disposition helps to unravel this mystery. If we look at the plasma levels following a small dose of pentothal, almost .4 gram, injected in a period of five minutes, we see the plasma level drop very rapidly, and the patient wakes up. If one had not had a precise method of analysis and got no further, one would have said, "Well, sure, the drug is for short action, because it obviously metabolizes rapidly." But if one follows the conditions, one finds a definite change, indicating that at a later stage, the drug was actually metabolizing extremely slowly, only about 15 per cent per hour.

Well, if that is the case, why do you get this dramatic drop in the plasma levels at the beginning? It was suspected that this drop was due to the fact that the drug was being rapidly localized in some body depot


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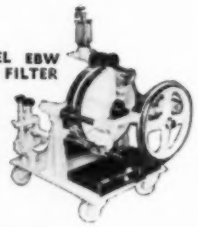

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and that when equilibrium had occurred between the body depot and the plasma, then the true rate of metabolism, which was slow, made itself felt.

To find this out, we studied the distribution of pentothal in the dog. In the first experiment, we never thought of measuring fat and we measured only these tissues. Looking at these tissues, one sees no particular degree of localization in them, and if one adds up the amount of Pentothal in each of the tissues and knowing the approximate weight of the tissues, one found, after two or three hours after injection, actually one could account for only about 20 per cent of the drug. This would seem to indicate that actually the drug was being metabolized rapidly. Finally, when the fat was measured, there were found these enormous concentrations in the fat. The drug was localized in the fat.

We performed a dynamic experiment to show the relationship at various time intervals. After the injection of the drug, the plasma, the muscle, and the liver rapidly came into equilibrium, and the central nervous system does exactly the same thing. They all start high, drop very rapidly, and as they drop, the fat concentration gradually rises, and actually, at the end of two or three hours, it can be shown that about 75 or 80 per cent of the drug remaining in the animal is localized in the fat.

What does this mean in explaining the pharmacological effect of Pentothal? The slow rate of transformation of thiopental was contrary to the generally accepted belief that the drug was only short acting, because it is rapidly transformed in the body. The plasma level of the anesthetic, after diffusion equilibrium between tissues and fat is established, is below that necessary for anesthesia, and the subject awakes soon after the injection. That is why the patient awakes rapidly when given a small dose—because of the short action. However, after a large dose or after repeated small doses, the resulting equilibrium plasma level is above the anesthetic level and, in fact, is maintained there by the reservoir of drug in the fat. Because of the slow metabolism of pentothal, anesthesia then continues for a considerable period of time.

I think it may be said that as a result of some of these studies, a more intelligent appreciation of the way Pentothal must be handled has accumulated, and it is generally recognized now that no matter how long an operation is, one must not give more Pentothal than can be adequately handled by that slow metabolic rate of 15 per cent an hour, so that usually now anesthetists are restricting the total amount of Pentothal to about 1 gram and are using it purely as a nasal anesthetic and some other easily volatile anesthetic is being used to maintain the anesthesia.

However, the anesthetists tell us that there remains a great need for a potent intravenous anesthetic which may be used in surgical procedures of long duration without producing prolonged postoperative depression. The behavior of thiopental, as well as other so-called ultra-short-acting barbiturates, suggests that such a drug should be rapidly destroyed in the body rather

than accumulated in fat. Studies in man of the chemical changes that inactivate thiopental were undertaken in order to obtain clues as to what compounds should be synthesized for trial.

To make this long story short, it was found that, contrary to some of the older conjectures, the acid ring of the barbiturates does not split. The barbiturates, as shown by our work and by Maynert's work, are inactivated by what looks on paper like a simple oxidation side chain, and therefore the problem resolves itself into making a barbiturate with unstable side chains.

In some work we have been doing in collaboration with other people, we have developed a compound known as 2365-DP, with a bromcyclohexenyl side chain, and this compound does seem to metabolize much more rapidly than thiopental in man, and it expresses itself in anesthesia by a much more rapid recovery of the patient from depression and the harmful influences of depression, and much more rapidly than pentothal. This drug at the moment is under extensive clinical trial.

I might mention that our ideas on this subject have changed in recent months by some fascinating developments that are taking place in Dr. Shen's group at Eli Lilly and Company. We have had the privilege of working with them on some of these compounds. They have a series of compounds which are barbiturates without alkyl groups on the nitrogen of the ring. The hydrogen is not here, but alkyl groups in the hydrogen of the ring. These compounds are characterized by the fact that huge doses, over long periods of time—this is preliminary—may be administered to patients, and the anesthesia is deep and yet, no matter how long the operation lasts, no matter how much pentothal you may have reason to give, the patient recovers from the effect of depression in an extraordinarily rapid time, and yet this is not due to the fact that the compound metabolizes rapidly but is due to the fact that, again, they localize in fat but localize to such an extraordinary degree that it seems as though they can take up almost limitless quantities of the drug, and at the end of the operation the patient still has most of the drug in him and it will probably take several days to get rid of it, but he will get rid of it with plasma concentration never being high enough to make the patient feel sebated.

I hope these few examples typify how these studies of the chemical fate of the drug in the body will help us in an understanding of drug therapy. In summary, a knowledge of the fate of a drug may save much time in learning how to use it to the best advantage in clinical practice. Such studies should be done, when possible, in man. In certain situations, an uuderstanding of the physiological disposition of the drug may rescue it from being discarded as ineffective or toxic. In addition, such studies can help in the inherent limitations of a whole class of drugs and give clues to the development of more suitable ones, and help to outline, finally, the importance of success in screening a class of drugs in an animal species, in the metabolism of the drug, in solving these problems in man.


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